

## **Exhibit 7**

# **PLAINTIFFS' RESPONSE TO DEFENDANTS' MOTION TO EXCLUDE GENERAL CAUSATION TESTIMONY OF PLAINTIFFS' EXPERTS**

Case No.: 4:22-md-03047-YGR

MDL No. 3047

In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation

*Lembke Rebuttal Report*

*Highly Confidential — Subject to Protective Order*

# **EXPERT REBUTTAL REPORT, ANNA LEMBKE, M.D.**

**July 30, 2025**

**RELATING TO: SOCIAL MEDIA LITIGATION**

**TABLE OF CONTENTS**

	<u>Page</u>
A. Summary of Rebuttal Opinions .....	1
B. Detailed Statements of Rebuttal Opinions .....	2
1. I disagree with Defendants’ experts that social media addiction is not recognized as a psychiatric disorder. Social media addiction has been widely recognized in the clinical treatment community, the medical literature, numerous professional leadership organizations, and the Defendants’ own documents, albeit using different language in different contexts. I further disagree that the Bergen Social Media Scale and other similar scales are an invalid way to assess for social media addiction. These scales are validated scales relied on in the peer-reviewed literature and by Defendants’ own researchers. ....	2
2. I disagree with Defendants’ experts that addiction to substances (drugs) is fundamentally distinct and different from addiction to behaviors, including but not limited to gambling, eating, sex, and social media. Decades of clinical experience and medical literature have shown that people can get addicted to behaviors just as they can get addicted to drugs. The phenomenology (patterns of behavior) for drug addiction and behavioral addiction are similar if not identical.....	4
3. I disagree that social media addiction is pathologizing normal/common behavior. Defendants’ social media platforms have made social connection addictive through design features that promote ease of access, frictionless overabundance, high potency, high novelty, and uncertainty, thereby exploiting users need for social validation and connection, and turning a healthy behavior into an addictive one.....	9
4. I disagree with Defendants’ experts that the scientific literature on social media addiction is insufficient or outweighed by the literature showing benefits of social media in youth. The totality of the evidence, based on my clinical experience, the medical literature, and importantly, the Defendants’ own internal documents, are more than sufficient to demonstrate the addictive and harmful nature of their products. Given the known risks, Defendants should warn adolescents and their parents about the addictive nature of their platforms. ....	11

### **A. Summary of Rebuttal Opinions**

Following a careful review of Defendants' experts' reports, the opinions outlined in my Report have not changed. In addition, for the reasons set forth in detail in this Rebuttal Report, I hold the following opinions:

**1. I disagree with Defendants' experts that social media addiction is not recognized as a psychiatric disorder. Social media addiction has been widely recognized in the clinical treatment community, the medical literature, numerous professional leadership organizations, and the Defendants' own documents, albeit using different language in different contexts. I disagree with Defendants' experts' criticisms of the Bergen Social Media Scale and similar scales. These scales are validated scales relied on in the peer-reviewed literature and by Defendants' own researchers.**

**2. I disagree with Defendants' experts that addiction to substances (drugs) is fundamentally distinct and different from addiction to behaviors, including but not limited to gambling, eating, sex, and social media. Decades of clinical experience and medical literature have shown that people can get addicted to behaviors just as well as they can get addicted to drugs. The phenomenology (patterns of behavior) for drug addiction and behavioral addiction are similar if not identical.**

**3. I disagree that social media addiction is pathologizing normal/common behavior. Defendants' social media platforms have made social connection addictive through design features that promote ease of access, frictionless overabundance, high potency, high novelty, and uncertainty, thereby exploiting users' need for social validation and connection, and turning a healthy behavior into an addictive one.**

**4. I disagree with Defendants' experts that the scientific literature on social media addiction is insufficient or outweighed by the literature showing benefits of social media in youth. The totality of the evidence, based on my clinical experience, the medical literature, and importantly, the Defendants' own internal documents, is more than sufficient to demonstrate the addictive and harmful nature of their products. Given the known risks, Defendants should warn adolescents and their parents about the addictive nature of their platforms.**

## B. Detailed Statements of Rebuttal Opinions

**1. I disagree with Defendants’ experts that social media addiction is not recognized as a psychiatric disorder. Social media addiction has been widely recognized in the clinical treatment community, the medical literature, numerous professional leadership organizations, and the Defendants’ own documents, albeit using different language in different contexts. I further disagree that the Bergen Social Media Scale and other similar scales are an invalid way to assess for social media addiction. These scales are validated scales relied on in the peer-reviewed literature and by Defendants’ own researchers.**

- a. In February 2024, the American Psychiatric Association (APA) recognized the validity of the term ‘social media addiction,’ and provided a clear and concise definition of that diagnosis: “Social media addiction involves problematic and compulsive use of social media; an obsessive need to check and update social media platforms, often resulting in problems in functioning and disrupted real-world relationships.”<sup>1</sup>
- b. Dr. Galván writes, “A hallmark of DSM-classified use disorders is determining that there is a ‘problematic pattern ... leading to clinically significant impairment or distress,’ including interfering with daily functioning. In other words, for someone to be classified as having an addictive ‘disorder,’ their social media use would need to meet this important threshold requirement and that this then resulted in interference with daily function to the point that person was forgoing eating, grooming, socializing with others, and leaving the house due to constant social media use. Evidence for this level of significant interference with daily life, particularly among adolescents, does not exist in the peer-reviewed literature.”<sup>2</sup>
- c. Dr. Galván’s claim is more specific and extreme than any generally accepted diagnostic criteria for addiction/use disorder that I am aware of. Indeed, the above-quoted text is more extreme than the generally accepted definition of addiction to substances such as opioids, which are described as ‘spectrum’ disorders, from mild to severe. None of the DSM criteria for substance use disorders specifically include language like “forgoing eating, grooming, socializing with others, and leaving the house due to constant social media use”.<sup>3</sup> There is no literature to support the view that the criteria for social media addiction should be more stringent than those for substance use disorders.
- d. Dr. Kishida writes, “The plaintiffs’ use of the terms derived from “addict” (i.e., “addictive,” “addiction,” and related terms) is ambiguous; it is not clear whether they mean pathological “addiction” as in a severe substance use disorder or colloquial “addiction” as in “something someone likes a lot and is a little bit

---

<sup>1</sup> American Psychiatric Association (2024) What is Technology Addiction?. <https://www.psychiatry.org/patients-families/technology-addictions-social-media-and-more/what-is-technology-addiction>.

<sup>2</sup> Expert Report of Adriana Galván, Ph.D., In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL No. 3047), July 9, 2025 (herein after “Galván MDL Report”), at p. 15.

<sup>3</sup> Galván MDL Report at p. 15.

ashamed of,” like romance novels (Lembke, 2011). Assuming a pathological construct, there is no sound scientific evidence demonstrating that social media platforms are ‘pathologically addictive.’”<sup>4</sup>

- e. Addiction is a spectrum disorder, and people can struggle with mild, moderate, or severe addictions. They can also struggle with minor addictions that might not meet threshold criteria for a psychiatric disorder but are still problematic and can cause harm. No matter where on this spectrum the individual lies, or what name you give to it, the patterns of behavior are similar and the underlying problem the same.
- f. The language of addiction medicine is currently in flux, with “addiction” being the most widely understood lay term to describe the behavior. Some sources use the term “abuse,” like the *National Institute on Drug Abuse (NIDA)*,<sup>5</sup> or “alcoholism,” like the *National Institute on Alcohol Abuse and Alcoholism (NIAAA)*<sup>6</sup> and *Alcoholics Anonymous (AA)*,<sup>7</sup> and still others, like the *Diagnostic and Statistical Manual of Mental Disorders*, eschew these terms altogether in favor of newer more anodyne terms like “substance use disorder,” “gambling disorder,” and “Internet gaming disorder.”<sup>8</sup>
- g. Defendants avoid the language of addiction by using functionally equivalent terms such as “problematic use” (Meta),<sup>9</sup> “toxic behavior” (Snapchat),<sup>10</sup> “YouTube stickiness” (YouTube),<sup>11</sup> and “excessive [use]” (TikTok).<sup>12</sup>
- h. Defendants’ use of such alternative terms should not be interpreted to mean that there is controversy in the field about what addiction is. There is not. Addiction has been well defined for centuries. At its most basic level, it is the continued compulsive use of a substance or behavior despite harm to self and/or others. Defendants’ and Defendants’ experts’ focus on terminology, and specifically their avoidance of the term *addiction*, should not distract from the obvious: addiction by any other name is still addiction.
- i. Dr. Galván writes about the Bergen Social Media Scale, “... this scale and others that purport to assess social media addiction were designed to examine other

---

<sup>4</sup> Expert Report of Kenneth T. Kishida, Ph.D. In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL No. 3047), July 9, 2025, (herein after “Kishida MDL Report”), at p. 4.

<sup>5</sup> National Institute on Drug Abuse. (n.d.) About NIDA. <https://nida.nih.gov/about-nida>

<sup>6</sup> National Institute on Alcohol Abuse and Alcoholism (n.d.) Mission Statement. <https://www.niaaa.nih.gov/our-work/mission-statement>.

<sup>7</sup> Alcoholics Anonymous (n.d.) What is A.A.? <https://www.aa.org/what-is-aa>.

<sup>8</sup> American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>, at pp. 545, 661, 913.

<sup>9</sup> META3047MDL-040-00078853.

<sup>10</sup> SNAP6110229 at SNAP6110232; SNAP6110234.

<sup>11</sup> GOOG-3047MDL-00874191 at \*9 (produced natively).

<sup>12</sup> TIKTOK3047MDL-197-04799946 at TIKTOK3047MDL-197-04799948.

behaviors and simply adapted by substituting “social media” for the other behavior.”<sup>13</sup>

- j. There’s nothing wrong with substituting “social media” for other behaviors or for drugs and alcohol, and in fact that’s exactly how the Diagnostic and Statistical Manual of Mental Disorders (DSM) is organized. Each ‘drug’ is listed with the same 11 criteria under the broader umbrella category of ‘use disorder’,<sup>14</sup> the DSM term for addiction. Gambling disorder criteria also largely adhere to the DSM criteria for a substance use disorder.<sup>15</sup>
- k. With respect to the scales, Dr. Tucker claims, “Moreover, these instruments fail to recognize that there are substantial differences across the diverse platforms, with each platform having different characteristics and features in a distinctly designed interface, such that important divergences would be expected in the relationship between these unique factors and a particular individual’s problematic usage (Cataldo 2022).”<sup>16</sup> Defendants’ platforms are more similar than not, each copying the others’ addictive design features to capture the widest audience and increase watch time by exploiting behavioral reward mechanisms as discussed in my Report.<sup>17</sup>

**2. I disagree with Defendants’ experts that addiction to substances (drugs) is fundamentally distinct and different from addiction to behaviors, including but not limited to gambling, eating, sex, and social media. Decades of clinical experience and medical literature have shown that people can get addicted to behaviors just as they can get addicted to drugs. The phenomenology (patterns of behavior) for drug addiction and behavioral addiction are similar if not identical.**

- a. Dr. Galván claims, “There is a lack of consensus regarding ‘behavioral addictions’ generally, which are very different from well- recognized addictions to chemical substances.”<sup>18</sup>
- b. In fact, there is overwhelming consensus in the addiction medicine field that people can get addicted to behaviors as well as substances. We see patients with serious behavioral addictions all the time in clinical care, and the morbidity and mortality related to behavioral addictions is indisputable. Gambling disorder and

---

<sup>13</sup> Galván MDL Report at p. 15.

<sup>14</sup> American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>, at pp 545-537.

<sup>15</sup> American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>, at pp 561.

<sup>16</sup> Expert Report of Douglas Tucker, M.D., In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, MDL No. 3047, July 9, 2025 (herein after “Tucker MDL Report”), at p. 10.

<sup>17</sup> Expert Report, Anna Lembke, MD., Relating to: Social Media Litigation, May 16, 2025 (herein after “Lembke MDL Report”), at p. 23-78.

<sup>18</sup> Galván MDL Report at p. 2.

Internet gaming disorder are already included in the DSM and ICD-11,<sup>19</sup> and others are being considered, from social media addiction to food addiction to sex addiction.<sup>20</sup> Indeed, as noted above, the American Psychiatric Association's 2024 statement of a definition of 'social media addiction' (Paragraph 1.a, above) provides further evidence of the consensus view that behavioral addictions, including social media addiction, do not differ meaningfully from those attributable to substance use.

- c. Further, leading professional medical organizations in the field of addiction medicine recognize that people can get addicted to behaviors as well as substances. The American Society of Addiction Medicine defined addiction as follows: "Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use *and other behaviors*. Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death."<sup>21</sup>
- d. Dr. Galván writes, "Social media use does not operate on the brain in the manner that chemical substances that are potentially addictive do. There are no specific receptors, transporters, or enzymes known to respond specifically to the behavior of engaging in social media use. Additionally, unlike with substance use that can be 'addictive,' there is no comparable direct activation of the brain's reward system because the features that are used and the content that is seen on social media is processed through external mediums like our eyes, ears, and fingers before reaching our brains (much like other aspects of our phones or computers) and there are no social media receptors in our brains."<sup>22</sup>
- e. But elsewhere in her report, Dr. Galván writes, "There are innumerable common and healthy experiences and stimuli that we all interact with every day that result in activation of the reward system (e.g., getting a good grade, being offered candy or money, compliments, learning something new, etc.). What activates the brain's reward systems can be unique to individuals, e.g., some people find certain foods

---

<sup>19</sup> American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>, at pp. 661, 913; World Health Organization. (2019). International Statistical Classification of Diseases and Related Health Problems (11th ed.). <https://icd.who.int/>, at pp. 560-561,

<sup>20</sup> Vidal, C. & Sussman, C. (2025). Problematic Social Media User or Social Media Addiction in Pediatric Populations. *Pediatr Clin N Am* 72, 291-304, <https://doi.org/10.1016/j.pcl.2024.08.005>.

<sup>21</sup> American Society of Addiction Medicine. (2011. August 15). Public Policy Statement: Short Definition of Addiction. [https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policystatements/1definition\\_of\\_addiction\\_short\\_4-11.pdf?sfvrsn=6e36cc2](https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policystatements/1definition_of_addiction_short_4-11.pdf?sfvrsn=6e36cc2) (emphasis added).

<sup>22</sup> Galván MDL Report at p.15.



(e.g., chocolate) rewarding while others do not. fMRI imaging will then reveal activation (increases in blood flow) in the brain’s reward system based on what an individual finds rewarding. For example, in my lab we did a study to examine the reward system using a sugary drink as the rewarding stimulus. We asked research participants to rate how rewarding they found the sugary drink—only those who found it rewarding elicited fMRI activation in the reward center whereas those who found a different drink rewarding elicited activation in the same reward region in response to the other drink. In other words, fMRI activation was linked to the stimuli that the individual person found rewarding (Galván and McGlennen, 2013).”<sup>23</sup>

- f. I agree with Dr. Galván that many different stimuli can activate the brain’s reward pathway, including social rewards from and comparison with others, which is exactly why social media can be addictive. In recognizing that the brain’s reward pathway is activated by behaviors like eating food, getting money, and receiving social validation, Dr. Galvan is undermining her own argument when she says social media cannot be addictive.
- g. Further, fMRI studies show activation of the brain’s reward pathway in response to specific addictive design features of social media, including that the reward pathway is more activated by posts and comments that have been “liked” by others (holding the content as a constant), as detailed in my Report.<sup>24</sup> By deploying a highly personalized and algorithmically tailored feed, social media ensures that each user receives “the stimuli that the individual person [finds] rewarding,” and not those they don’t find rewarding.
- h. Dr. Kishida writes, “There is no reliable evidence that use of social media platforms engages the dopamine system in a pathologically ‘addictive’ manner.”<sup>25</sup> Dr. Pfeifer makes a similar claim, writing that there is no scientific evidence “that typical brain processes related to pleasurable everyday experiences mirror the

---

<sup>23</sup> Galván MDL Report at p.7.

<sup>24</sup> Izuma, K., Saito, D. N., & Sadato, N. (2008). Processing of social and monetary rewards in the human striatum. *Neuron*, 58(2), 284–294. <https://doi.org/10.1016/j.neuron.2008.03.020>; Sherman, L. E., Payton, A. A., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2016). The Power of the Like in Adolescence: Effects of Peer Influence on Neural and Behavioral Responses to Social Media. *Psychological science*, 27(7), 1027–1035. <https://doi.org/10.1177/0956797616645673>; Davey, C. G., Allen, N. B., Harrison, B. J., Dwyer, D. B., & Yücel, M. (2010). Being liked activates primary reward and midline self-related brain regions. *Human brain mapping*, 31(4), 660–668. <https://doi.org/10.1002/hbm.20895>; Kim, S. H., Baik, S. H., Park, C. S., Kim, S. J., Choi, S. W., & Kim, S. E. (2011). Reduced striatal dopamine D2 receptors in people with Internet addiction. *Neuroreport*, 22(8), 407–411. <https://doi.org/10.1097/WNR.0b013e328346e16e>; Flannery, J. S., Burnell, K., Kwon, S. J., Jorgensen, N. A., Prinstein, M. J., Lindquist, K. A., & Telzer, E. H. (2024). Developmental changes in brain function linked with addiction-like social media use two years later. *Social cognitive and affective neuroscience*, 19(1), nsae008. <https://doi.org/10.1093/scan/nsae008>.

<sup>25</sup> Kishida MDL Report, at p.4.

atypical processes underlying diagnosed substance use disorders (which, as Lembke concedes, *alter* typical brain processing).”<sup>26</sup>

- i. To the contrary, as explained in my Report, there is robust evidence that social validation, social connection, and other forms of social rewards, including through digital media, activate the brain’s reward pathway and release dopamine, which, when combined with clinical observation and subjective experience, demonstrate sufficient biological plausibility for social media addiction.<sup>27</sup>
- j. Dr. Tucker notes gambling disorder was included in the DSM-5 in 2013 but then makes the false claim that gambling disorder is different from social media addiction because gambling involves “the pursuit of rewards through chance, the belief that losses are temporary and will be recouped, and the lack of any positive communal benefits.”<sup>28</sup>
- k. Social media also includes the “pursuit of rewards through chance,” including social rewards. The algorithms are a game of chance. Refreshing the browser, referred to in Defendants’ documents as “pull-to-refresh,”<sup>29</sup> analogizes to slot machines.
- l. Social media can involve the “the belief that losses are temporary and will be recouped,” such as likes, streaks, followers, and rankings. We have evidence that Defendants used these design features to optimize for time spent on the platform by encouraging users to chase these quantified social rewards and induce Fear of Missing Out (FOMO) when they weren’t optimizing for these.<sup>30</sup>
- m. Social media can also involve “lack of any positive communal benefits,” when time online leads to harm to self and/or others. Use of these platforms for hours on end during school, during sleep time, etc., can hardly be said to contribute to the greater good.
- n. Dr. Kishida acknowledges the existence of gambling addiction, but not any other behavioral addiction.<sup>31</sup> He distinguishes gambling addiction from other behavioral

---

<sup>26</sup> Expert Report of Jennifer Pfeifer, Ph.D., In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, MDL No. 3047, July 9, 2025 (herein after “Pfeifer MDL Report”), at p. 23.

<sup>27</sup> Lembke MDL Report at p. 8-12.

<sup>28</sup> Tucker MDL Report at p. 7.

<sup>29</sup> META3047MDL-047-01167629 at META3047MDL-047-01167637.

<sup>30</sup> See GOOG-3047MDL-02009802, SNAP5486213 at SNAP5486214, GOOG-3047MDL-01268284 at \*16 (produced natively), Alutaybi, A., Al-Thani, D., McAlaney, J., & Ali, R. (2020). Combating Fear of Missing Out (FoMO) on Social Media: The FoMO-R Method. International journal of environmental research and public health, 17(17), 6128. <https://doi.org/10.3390/ijerph17176128>.

<sup>31</sup> Kishida MDL Report at p. 5.

addictions based on the loss of real money,<sup>32</sup> which is not a necessary criterion for DSM diagnosis.<sup>33</sup>

- o. Nonetheless, he does not seem to be aware that real money is being exchanged on these social media platforms and that one aspect of problematic/consequential use is monetary loss. See my opening report for several examples of this, including, “TikTok Live, real-time, livestreamed videos, allow for the exchange of monetary rewards for content creators from viewers, and for viewers from content creators. In response to the feature of vouchers for viewers who stay on the platform longer, TikTok’s internal documents note the risks for kids: “Concerned that since the vouchers are being used to incentivize uses [sic] to stay longer on lives this goes against some of our risks for minors.”<sup>34</sup> The gamblified nature of social media is part of what makes it addictive, especially its use of uncertain rewards and intermittent reinforcement.
- p. Dr. Kishida states, “There is no reliable scientific evidence that natural stimuli like that experienced through social media (i.e., sight, sound, and touch) lead to any of the same effects seen with the substances identified above. And that is for good reason. Each of the prior mentioned substances has direct, physical effect on the brain because it is ingested and therefore bypasses the neural circuitry in a way that external stimuli (like social media) cannot.”<sup>35</sup>
- q. This suggests that Dr. Kishida doesn’t believe that people can get addicted to behaviors of any kind, including gambling, since we don’t ‘ingest’ gambling and since gambling, like social media and other addictive behaviors, ‘rely on sight, sound, and touch.’ Yet as he himself attests, gambling disorder is a well-researched, well-validated disorder, not to mention a growing public health problem with increased access to digital gambling platforms.<sup>36</sup>

---

<sup>32</sup> Kishida MDL Report at p. 64.

<sup>33</sup> American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>, at pp. 662-662.

<sup>34</sup> Deposition of Reagan Maher, February 21, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 87:21-88:15, TIKTOK3047MDL-021-LARK-00005437-TIKTOK3047MDL-021-LARK-00005440, cited by Lembke MDL Report at p. 68.

<sup>35</sup> Kishida MDL Report at p. 26.

<sup>36</sup> Kishida MDL Report at p. 5.

**3. I disagree that social media addiction is pathologizing normal/common behavior. Defendants’ social media platforms have made social connection addictive through design features that promote ease of access, frictionless overabundance, high potency, high novelty, and uncertainty, thereby exploiting users need for social validation and connection, and turning a healthy behavior into an addictive one.**

- a. Dr. Auerbach states, “Plaintiffs’ experts imply that adolescents’ desire to socialize online reflects a mental health disorder.”<sup>37</sup> Similarly, Dr. Allen states that Plaintiffs’ experts engage in “concept creep” by “attempts to label something addictive based on company documents reflecting that users might enjoy using the app or use it in a habitual way.”<sup>38</sup> That is not at all what I or other experts are saying. The desire to socialize is healthy and innately human. Socializing online can be an extension of our healthy desire to connect. However, when social media is *druggified*, through the manipulation of addictive design features that promote ease of access, frictionless overabundance, high potency, high novelty, and uncertainty, as detailed in my report,<sup>39</sup> then something that is healthy is turned into something that is unhealthy for a substantial subset of users, especially kids.
  - i. Meta’s Instagram well-being team reported that the company’s “[p]roduct features” such as “likes, notification, the pull-down-to-see, the infinite scroll, etc.” are “designed to exploit insecurity, or provide a dopamine rush” and “increase time spent” and “exploit[] weaknesses in the human psychology to promote product engagement and time spent”—all of which is “inherently at odds with well-being and take away from people’s ability to consciously focus[] on activities that add value to their lives.”<sup>40</sup>
  - ii. Via an internal deck entitled “Teen Fundamentals,” Meta’s Instagram team specifically conducted research into the neuroscience and unique vulnerabilities of still-developing adolescent brains with the aim of adapting Instagram to take advantage of teens’ unique psychology.<sup>41</sup>
  - iii. In another internal Instagram research document, Instagram researchers discussed focus groups held with teen Instagram users who reported “that they don’t like the amount of time they spend on the app, but feel like they have to be present. They often feel ‘addicted’ and know that what they’re seeing is bad for their mental health but feel unable to stop themselves.”<sup>42</sup>

---

<sup>37</sup> Rebuttal Report of Dr. Randy Auerbach to Personal Injury and School District Plaintiff’s Experts, In Re: Social Media Adolescent Addiction/Personal Injury Products Litigation, MDL No. 3047, July 9, 2025 (herein after “Auerbach MDL Rebuttal Report”), at p.8.

<sup>38</sup> Rebuttal Report of Prof. Nicholas Allen to Personal Injury and School District Plaintiff’s Experts, In Re: Social Media Adolescent Addiction/Personal Injury Products Litigation, MDL No. 3047, July 9, 2025 (herein after “Allen MDL Rebuttal Report”), at p.78.

<sup>39</sup> Lembke MDL Report.

<sup>40</sup> META3047MDL-044-00026817 at META3047MDL-044-00026826.

<sup>41</sup> META3047MDL-003-00132740 at 00132741, 00132750-52, 00132761-62, 00132766, 00132787, 00132795, 00132797.

<sup>42</sup> META3047MDL-019-00017593 at META3047MDL-019-00017595.

In that same document, Instagram researchers noted that teen Instagram users “have an addict’s narrative about their use -- it can make them feel good, feel bad. They wish they could spend less time caring about it, but they just can’t help themselves.”<sup>43</sup> And Instagram researchers added that teens also reported that they “recognize the amount of time they spend online isn’t good for them but at the same time know they lack the willpower to control the time spent themselves.”<sup>44</sup>

- iv. A summer 2019 Instagram research presentation entitled “Teen Mental Health: Creatures of Habit” contained internal Instagram insights into consequences of Teen’s Instagram use. Researchers noted that “Instagram is addictive, and time-spend on platform is having a negative impact on mental health”, and that teens report “that without even thinking every time they pick up their phone, they automatically go to Instagram. They know they stay up later than they should and miss out on sleep to stay plugged in.”<sup>45</sup>
- v. Additionally, the Facebook (Meta) Empathy team internally reported that the “Known Negative Effects of FB and/or Social Media in General on Teens” due to “increased screen time” includes “sleep issues, which have long term negative effects on cognitive and physical development” and that “1/5 teens report waking up and checking social media in the middle of the night.”<sup>46</sup> Other reported negative effect included social pressures, body image concerns, fear of missing out (“FoMo”), depression, isolation, and anxiety.<sup>47</sup>
- b. Dr. Allen states “Equating disappointment and frustration—both common emotions that apply to a wide variety of everyday experiences—with the clinical phenomena of craving and withdrawal makes neither scientific nor logical sense”<sup>48</sup> I disagree. These are characteristic emotions when a person is experiencing withdrawal. In the context of Snap streaks, as explained in my Report, “It is no surprise that Snapchat users feel ‘excited, positive, happy, etc’ when using Snapchat. They are experiencing the rewarding properties (the ‘high’) of the medium, which creates the conditions for the come-down or withdrawal, i.e. feeling depressed, irritable, and anxious, when they’re not using. The development of ‘anticipatory’ use hints at addiction and craving to follow.”<sup>49</sup>
- c. Dr. Allen states that “Plaintiffs’ experts conjecture that there *might* be a causal pathway, and that therefore social media features *might* be more attractive to

---

<sup>43</sup> META3047MDL-019-00017593 at META3047MDL-019-00017595.

<sup>44</sup> META3047MDL-019-00017593 at META3047MDL-019-00017595.

<sup>45</sup> META3047MDL-003-00091196 at META3047MDL-003-00091210.

<sup>46</sup> META3047MDL-044-00026817 at META3047MDL-044-00026818.

<sup>47</sup> META3047MDL-044-00026817 at META3047MDL-044-00026818.

<sup>48</sup> Allen MDL Rebuttal Report, at p. 77.

<sup>49</sup> Lembke MDL Report, at p. 49.

adolescents and *might* therefore be more likely to cause particular harms.”<sup>50</sup> This is not “conjecture” for the reasons explained in my Report.<sup>51</sup> Furthermore, defense expert Dr. Auerbach’s summary of adolescent brain development highlights how teens are more socially oriented, more likely to take risks, how their limbic brain matures faster than the prefrontal cortex, and how social relationships engage and activate the reward circuitry: “This pursuit of social relationships engages reward-related brain activity (e.g., striatum) and the dopamine system (Kumar et al., 2019; Pagliaccio et al., 2023).”<sup>52</sup> His description of adolescent brain development lays a solid foundation for how social media can be a drug that teens are more susceptible to than adults.

- d. Dr. Auerbach argues that the current approach to studying social media addiction through use of surveys “is exceedingly unreliable, as researchers have shown that reports of ‘addiction’ to ‘friends’ offline (i.e., in person) have similar prevalence rates or higher (e.g., Satchell et al 2021).”<sup>53</sup> This is a spurious distinction because being ‘addicted’ to friends offline is unlikely to compromise friendship, whereas social media addiction does, as well as contributing to loneliness, depression, and other mental health disorders, which Satchell’s survey<sup>54</sup> fails to assess. Moreover, Satchell et al. describe their research as “satirical” and note “[o]ne would hopefully recognize that conceptually (and indeed pragmatically) this measure is sardonic ... ‘[o]ffline friend addiction’ is not an issue of concern for public health”. Whereas social media addiction is a widely recognized concern for public health.<sup>55</sup>

**4. I disagree with Defendants’ experts that the scientific literature on social media addiction is insufficient or outweighed by the literature showing benefits of social media in youth. The totality of the evidence, based on my clinical experience, the medical literature, and importantly, the Defendants’ own internal documents, are more than sufficient to demonstrate the addictive and harmful nature of their products. Given the known risks, Defendants should warn adolescents and their parents about the addictive nature of their platforms.**

- a. Defendants’ experts have claimed that Defendants’ internal documents do not constitute scientifically reliable evidence. Dr. Tucker claims “they are not peer-reviewed, are often anecdotal or incomplete, lack methodological rigor, are not

---

<sup>50</sup> Allen MDL Rebuttal Report, at p. 73.

<sup>51</sup> Lembke MDL Report, at p. 12-22.

<sup>52</sup> Auerbach MDL Rebuttal Report at p. 12.

<sup>53</sup> Auerbach MDL Rebuttal Report, at p. 8.

<sup>54</sup> Satchell, L. P., Fido, D., Harper, C. A., Shaw, H., Davidson, B., Ellis, D. A., Hart, C. M., Jalil, R., Bartoli, A. J., Kaye, L. K., Lancaster, G. L. J., & Pavetich, M. (2021). Development of an Offline-Friend Addiction Questionnaire (O-FAQ): Are most people really social addicts?. *Behavior research methods*, 53(3), 1097–1106. <https://doi.org/10.3758/s13428-020-01462-9>.

<sup>55</sup> Social Media and Youth Mental Health: The U.S. Surgeon General’s Advisory (2023); Thiagarajan, T. C., Newson, J. J., & Swaminathan, S. (2025). Protecting the Developing Mind in a Digital Age: A Global Policy Imperative. *Journal of Human Development and Capabilities*, 1–12, <https://doi.org/10.1080/19452829.2025.2518313>.



reproducible or independently verifiable, and frequently reflect business deliberations or strategy rather than objective scientific analysis.”<sup>56</sup> Dr. Auerbach claims, “Defendants’ Internal Documents Are Not Scientifically Reliable Evidence of Causation.”<sup>57</sup>

- b. I disagree. As detailed in my report, Defendants’ internal studies are far from anecdotal, are often methodologically rigorous, and in some cases have been externally peer reviewed. If Defendants were willing to share their data with external researchers, which to my knowledge they have not been willing to do, their work could be independently verifiable. Defendants’ failure to make their data available for peer review should disqualify them from arguing that their studies are unreliable due to the absence of peer review. Indeed, independent scholars will welcome the opportunity to examine such materials, and undoubtedly will do so when the documents and data become available following public disclosure through trials in this litigation. Further, Defendants’ internal research hinges on specific use metrics designed to increase engagement regardless of content.
- c. Meta’s own internal research demonstrates compelling evidence of harm to youth based on addictive design features.
  - i. As discussed in my Report, Meta’s researchers, [REDACTED], [REDACTED], [REDACTED] and [REDACTED], performed an internal Facebook Study, “Understanding Perceptions of Problematic Facebook Use,” in which they paired “a survey of 20,000 Facebook users in the U.S. measuring perceived problematic Facebook use with server logs of aggregated behavioral data for the previous four weeks, such as the amount of time respondents spent on the site and counts of interactions with close friends.”<sup>58</sup> They found that 3.1% of U.S. Facebook users developed severe social media addiction.<sup>59</sup> An internal document reported this finding next to an additional finding from global data that 55% of Facebook users developed mild social media addiction.<sup>60</sup>
  - ii. The U.S. survey used in “Understanding Perceptions of Problematic Facebook Use” consisted of the following questions “adapted from existing literature and questions from academia on Internet addiction and problematic use,”<sup>61</sup> lending further credence to the idea that Meta’s

---

<sup>56</sup> Tucker MDL Report at p. 4.

<sup>57</sup> Auerbach MDL Rebuttal Report at p. 11.

<sup>58</sup> [REDACTED], & [REDACTED]. (2019). Understanding Perceptions of Problematic Facebook Use. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/3290605.3300429>.

<sup>59</sup> [REDACTED], & [REDACTED]. (2019). Understanding Perceptions of Problematic Facebook Use. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/3290605.3300429>, at p. 2; META3047MDL-053-00028484.

<sup>60</sup> META3047MDL-053-00028484.

<sup>61</sup> META3047MDL-040-00078853.

definition of problematic use is synonymous with addictive use. Each question below was measured on a 4 or 5-point Likert scale, with cut-offs at 4 or 5 to signal “problematic use.”<sup>62</sup> For example, reporting losing sleep “very often” or “always” was considered problematic.<sup>63</sup> Less than that was not.<sup>64</sup> For each person, they counted the number of questions where participants reported a problem.<sup>65</sup>

- “How do you feel about how much time you spend on Facebook?”<sup>66</sup> This question gets at the C= out-of-control use diagnostic criterion for an addictive use disorder, with those reporting feeling dismayed about time spent on Facebook more likely to have an addiction.
- “How much control do you feel you have over the amount of time you spend on Facebook?”<sup>67</sup> This question addresses the C=out-of-control use directly, eliminating any ambiguity about what might be meant by feeling badly about time spent.
- “Overall, do you feel like Facebook has had a positive or negative impact in your life?”<sup>68</sup> This question gets right to the heart of C=consequences related to Facebook use, another diagnostic criterion for an addictive use disorder.
- “How often, if ever, do you try to reduce use of Facebook?”<sup>69</sup> This question gets at the C=compulsions diagnostic criterion, that is the loss of agency in addiction, where the individual is using more than they want to.
- How often do you get less sleep than you want because you're using Facebook?”<sup>70</sup> This question gets at the C=consequences criterion for diagnosing an addictive use disorder.
- “Overall, how much does your use of Facebook hurt your relationships with others?”<sup>71</sup> This question gets at the C=consequences criterion for diagnosing an addictive use disorder.

---

<sup>62</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>63</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>64</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>65</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>66</sup> META3047MDL-040-00078853.

<sup>67</sup> META3047MDL-040-00078853.

<sup>68</sup> META3047MDL-040-00078853.

<sup>69</sup> META3047MDL-040-00078853.

<sup>70</sup> META3047MDL-040-00078853.

<sup>71</sup> META3047MDL-040-00078853.



- “To what extent does Facebook help or hurt your work or school performance?”<sup>72</sup> This question gets at the C=consequences criterion for diagnosing an addictive use disorder.
  - “How concerned are you about missing important posts on Facebook if you don't log in frequently enough?”<sup>73</sup> This question gets at the C=craving diagnostic criterion, describing states of wanting the drug when not using.
- iii. The [REDACTED] et al “Understanding Perceptions of Problematic Facebook Use” study was submitted to “ACM CHI2019.” Importantly, Meta [REDACTED] misleadingly presented the figure of 3.1% as an “upper bound”.<sup>74</sup> As noted above, addiction is a spectrum disorder, and it is highly relevant for researchers to disclose the full range of their findings, regardless of whether the term used is “addiction” or the functional equivalent of “problematic use”. By failing to disclose the prevalence of mild and moderate “problematic use,” Meta [REDACTED] presented an incomplete and unduly favorable characterization of the data. This presentation is all the more troubling in light of Meta’s internal documents showing a prevalence of 55% with mild or greater problematic use in a different population.<sup>75</sup> The study was peer reviewed by two external reviewers<sup>76</sup> and the authors were provided with extensive commentary and feedback.<sup>77</sup> Feedback from one of the external reviewers included the following:
- “The interpretation of people viewing friends’ profiles as seeking connection seems overly positive to me. My interpretation of this would be related to social comparison, or colloquially (‘Facebook stalking’) which both seem more likely to be associated with problematic behaviors than seeking connection. I’d like to see a more multi-faceted and balanced interpretation of these kinds of data.”<sup>78</sup>
- iv. In other words, this external reviewer directly called out the overly rosy interpretation of these data and identified the time spent viewing profiles as part of a potentially harmful feedback loop.

---

<sup>72</sup> META3047MDL-040-00078853.

<sup>73</sup> META3047MDL-040-00078853.

<sup>74</sup> [REDACTED], & [REDACTED] (2019). Understanding Perceptions of Problematic Facebook Use. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/3290605.3300429>.

<sup>75</sup> META3047MDL-053-00028484; META3047MDL-044-00020409 at -20429.

<sup>76</sup> META3047MDL-040-00079907 at META3047MDL-040-00079912.

<sup>77</sup> META3047MDL-040-00079907 at META3047MDL-040-00079912.

<sup>78</sup> META3047MDL-040-00079907 at META3047MDL-040-00079915.

- v. The [REDACTED] et al “Understanding Perceptions of Problematic Facebook Use” study was published in CHI Conference on Human Factors in Computing Systems Proceedings,<sup>79</sup> underscoring that Meta’s [REDACTED] et al “Understanding Perceptions of Problematic Facebook Use” study was founded on meaningful data and peer reviewed.
- vi. Meta internal documents further show that the [REDACTED] et al study was part of a larger body of research conducted by Facebook (Meta) on the impact of their products on well-being, including extensive reviews of the medical literature and consultation with experts in the field.<sup>80</sup> Meta’s “well-being findings have been presented at the H2 2017 Company All-Hands, earning calls, and before Congress.”<sup>81</sup>
- vii. Using the same data from the U.S. survey used in “Understanding Perceptions of Problematic Facebook Use,” in another study, [REDACTED] and colleagues “divided participants into two groups: (1) Those reporting two or more problematic use cases, and (2) those who don’t [report two or more problematic use cases],” and compared their demographics and activities on Facebook.<sup>82</sup> The study found that 13% of respondents reported fell into the first problematic use category (which the study denominated as “problematic users”), and 36% of respondents reported fell into the second category.<sup>83</sup>
- viii. [REDACTED] and colleagues’ work focused on users’ interaction with the products over content. They found that the 13% considered problematic users “spend more time on the site (42 vs. 36 hours in a month)[;] receive more notifications and respond to them more quickly[;] have more sessions and log in to FB at a wider variety of times of day[;] are more likely to deactivate (and reactivate).”<sup>84</sup>
- ix. [REDACTED] and colleagues found that youth consumers are the most vulnerable to social media addiction: “Teens and people in their 20s are the most likely to report problematic use.”<sup>85</sup>
- x. An October 2019 document discussing “Facebook’s Measurement Strategy for Problematic use” noted: “We have a survey to detect problematic use that is deeply rooted in external academic as well as internal quantitative and qualitative user experience research;” and “We

---

<sup>79</sup> [REDACTED], & [REDACTED] (2019). Understanding Perceptions of Problematic Facebook Use. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/3290605.3300429>.

<sup>80</sup> META3047MDL-040-00078853 at META3047MDL-040-00078861.

<sup>81</sup> META3047MDL-040-00078853.

<sup>82</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>83</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>84</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

<sup>85</sup> META3047MDL-040-00078853 at META3047MDL-040-00078854.

have broken down problematic use sub-areas into time-related and content-related issues, thus making it easier to move these issues, which likely have different product solutions separately.”<sup>86</sup>

- xi. Meta’s framing of problematic use was applied to Instagram as well, and Meta’s researchers exchanged and cross-pollinated research on Facebook to similar research conducted on Instagram.
- xii. This exchange between Facebook and Instagram Meta employees illustrates how ██████████ et al’s work was used to inform studies of Instagram users: “██████████ (10/26/2021 11:55:07 PDT): >btw, do we have a specific definition for problematic social media use?[:]  
  
██████████ (10/26/2021 13:33:53 PDT): >We defined one in a paper: <https://research.fb.com/publications/understanding-perceptions-of-problematic-facebook-use/> (for FB)”[:]  
  
██████████ (10/26/2021 14:48:50 PDT): >Central has a paper too. I can pull these for you”.<sup>87</sup>

- d. TikTok’s own internal research demonstrates compelling evidence of harm to youth based on interactive design features, regardless of content.
  - i. “Internal TikTok documents reveal that TikTok deployed its own metric for excessive (likely addictive) use, which they call ‘unbalanced’ use based on their ‘Balance Engagement Index.’”<sup>88</sup>
  - ii. “TikTok’s Balance Engagement Index (BEI) is equal to ‘1- Unbalanced Engagement Rate,’ where unbalanced engagement rate is measured in different ways, including time spent on the platform.”<sup>89</sup>
  - iii. “TikTok’s research reveals that 40.5% of minors “hit the excessive duration limit and 22% of them hit the night duration limit,” where “Excessive users are users who continuously use TikTok for more than 80 mins at day or more than 60 mins at night.” TikTok refers to these individuals as “binge users,” borrowing from the language of addiction, where a ‘binge drinker’ is someone who uses large quantities of alcohol within a discrete period of time.”<sup>90</sup>

---

<sup>86</sup> META3047MDL-047-00361907.

<sup>87</sup> META3047MDL-003-00079563 at META3047MDL-003-00079564.

<sup>88</sup> TIKTOK3047MDL-197-04799946, cited by Lembke MDL Report at p.70 .

<sup>89</sup> TIKTOK3047MDL-197-04799946 at TIKTOK3047MDL-197-04799948, cited by Lembke MDL Report at p. 71

<sup>90</sup> TIKTOK3047MDL-197-04799946 at TIKTOK3047MDL-197-04799949, TIKTOK3047MDL-197-047999451, Deposition of Jordan Furlong, Volume II, April 12, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 441:19-442:16, cited by Lembke MDL Report at p.71.

- iv. “TikTok’s research found that 6.95% of active minors at nighttime are excessive users, and 4.18% of active minors at daytime are excessive users, which translates to 900,000 teens using TikTok excessively at nighttime (6.95% of 13 million), and 500,000 during the day (4.18% of 13 million).”<sup>91</sup>
- e. Dr. Tucker writes, “In my opinion, the amount of time spent ‘on the platform’ is unlikely to be an appropriate metric to link YouTube or any social media use to psychiatric disorders, since time spent on YouTube and other platforms often involves healthy or productive activities (Cui et al. 2024; Marciano and Viswanath 2023; Pew 2015; Pires 2021; Rosic et al. 2022).”<sup>92</sup>
- f. I disagree. Although we do not diagnose social media addiction based on time alone, time spent on social media is an important risk factor for addiction: The more time spent on social media, the higher the risk of harm, including the risk of addiction.<sup>93</sup>
- g. A survey by the Pew Research Center, “Teens, Social Media and Technology 2024,” shows that nearly half of teens say they’re online “almost constantly,”<sup>94</sup> and when asked what they’re doing online, teens listed Defendants’ platforms in the top four, with YouTube topping the list, followed by TikTok, Instagram, and Snapchat.<sup>95</sup>
- h. Defendants’ own internal data show excessive and binge use of their platforms, especially among kids,<sup>96</sup> with a clear link between excessive use, addictive use, and mental health harms, as detailed in my Report<sup>97</sup>, and here:
  - i. Meta’s own researchers found that “...measures of time spent also correlate positively with increased problematic use. People reporting problematic use are on Facebook at a wider variety of times in the day (even after controlling for time spent), and also open Facebook more

---

<sup>91</sup> TIKTOK3047MDL-197-04799946 at TIKTOK3047MDL-197-04799949, Deposition of Jordan Furlong, Volume II, April 12, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 442:17-443:1, OJJDP Statistical Briefing Book. Online. Available: <https://ojjdp.ojp.gov/statistical-briefing-book/population/faqs/QA01104>. Released on 10/13/2021, Faverio, M., Sidoti, O., & Pew Research Center. (2024). Teens, Social Media and Technology 2024. In Pew Research Center. <https://www.pewresearch.org>, at p. 3, cited by Lembke MDL Report at p.71.

<sup>92</sup> Tucker MDL Report at p. 17.

<sup>93</sup> Lembke MDL Report at p. 82-83.

<sup>94</sup> Faverio, M., Sidoti, O. (2024). Teens, Social Media and Technology 2024, Pew Research Center, <https://www.pewresearch.org/internet/2024/12/12/teens-social-media-and-technology-2024>, at p. 3; Faverio (2025). 10 facts about teens and social media, <https://www.pewresearch.org/short-reads/2025/07/10/10-facts-about-teens-and-social-media/>.

<sup>95</sup> Faverio, M., Sidoti, O. (2024). Teens, Social Media and Technology 2024, Pew Research Center, <https://www.pewresearch.org/internet/2024/12/12/teens-social-media-and-technology-2024>, at p. 3.

<sup>96</sup> See Lembke MDL Report at pp. 36-39, 53-54, 60-61, 69-71.

<sup>97</sup> See Lembke MDL Report at pp. 78-86.

frequently (i.e. having a greater number of sessions or periods of continuous use.)”<sup>98</sup>

- ii. Meta’s researchers concluded, “People with problematic use (those who report two or more problematic use cases) do spend more time on Facebook ~42 hours in the past 28 days vs. ~35 hours).”<sup>99</sup> And “On average, people spent 28% more time on Instagram as well. Notably, people who report that their use of Facebook is problematic tend to spend a larger fraction of time using Instagram (if they are also on Instagram).”<sup>100</sup>
- iii. “Is problematic use simply a factor of using Facebook too long?” Meta researchers responded, “Not quite.... People who spend the least amount of time on Facebook (< 9 hours per month) also report problematic use at a substantial rate,” noting that it’s how they use Meta’s platforms that matters most, although time spent is clearly a risk factor.<sup>101</sup>
- iv. YouTube began receiving negative user feedback regarding the addictive nature of YouTube Shorts and the negative impact of YouTube Shorts on a user’s mental health immediately after the product was launched.<sup>102</sup> Such complaints and requests for the ability to turn off Shorts have been persistent over time, and include complaints that Shorts are addictive, reduce attention span, cause headache and anxiety, lead to wasted time on endless scrolling, are “toxic and harmful,”<sup>103</sup> and distract from studying.<sup>104</sup> As one user explained, “I’ve become addicted to your shorts and I feel useless. I want to die.”<sup>105</sup>

---

<sup>98</sup> META3047MDL-040-00078853 at META3047MDL-040-00078856-78857.

<sup>99</sup> META3047MDL-019-00032957 to META3047MDL-019-00032958.

<sup>100</sup> META3047MDL-019-00032957 to META3047MDL-019-00032958.

<sup>101</sup> META3047MDL-019-00032957 to META3047MDL-019-00032958.

<sup>102</sup> Deposition of Genoveva Descalzo (Rough), July 18, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047) at 56:19-57:5, 65:12-66:6, 68:7-69:9; 70:8-71:5; Exhibit. 3 (GOOG-3047MDL-0087048), Exhibit 5 (GOOG-3047MDL-01256238, tab “India Teams Sorted Feedback” at cell C22849), Exhibit 6, (GOOG-3047MDL-01259508, tab “Pulse feedbackneutron-report\_20” at cell C11213), Exhibit 7 (GOOG-3047MDL-03971647, tab “Discovery Feedback” at cell D9467).

<sup>103</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Exhibit 9 (GOOG-3047MDL-024402080, tab “Nov 24 2023 – Feb 21 2024” at cell A64)

<sup>104</sup> See e.g. Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 104:23-133:17, 155:5-21; Exhibit. 8 (GOOG-3047MDL-02889060 at cell D56), Exhibit 9 (GOOG-3047MDL-024402080, tab “Nov 24 2023 – Feb 21 2024” at cells A10, A40, A64, A70, A178, A180, A213, A256, A294, A344, A366), Exhibit 10 (GOOG-3047MDL-05997412 at cells B41, B201, B317, B353, B382), Exhibit 13 (GOOG-3047MDL-05960976 at cell BB634).

<sup>105</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 122:19-24; Exhibit 9 (GOOG-3047MDL-024402080, tab “Nov 24 2023 – Feb 21 2024” at cell A294).



- v. User requests for the ability to remove or disable YouTube Shorts from a user's feed was a Top User Issue across YouTube in 2023.<sup>106</sup>
- vi. Moreover, SupeX parent requests for the ability to remove or disable Shorts represented was the number one Youth Issue in the second and third quart of 2023, representing 13.5% of youth feedback (9,900 reports).<sup>107</sup> Such requests were not based on specific content but on the effect shorts had on children's attention spans and habits.<sup>108</sup> Nonetheless, YouTube has not provided users with the ability to completely remove or turn off YouTube Shorts.<sup>109</sup>
- vii. A deep dive into teen feedback on YouTube Shorts, found that 15.9% of all teen users requesting the ability to turn off YouTube Shorts did so on the basis that they found Shorts to be addictive and distracting, representing one-third of teen users providing a reason for the request.<sup>110</sup> The leading concerns were that Shorts interfered with studying, wasted time, and caused unhealthy use of YouTube.<sup>111</sup>
- i. Dr. Kishida writes, "I am not aware of any study that seeks to evaluate whether social media is potentially addictive irrespective of content."<sup>112</sup> But many studies looking at social media addiction find that the addictive design features of Defendants' products are at the core of their addictive potential, regardless of content. An example is Shakya and Christakis (2017) discussed in my Report.<sup>113</sup>
- i. A just published study by Xiao et al investigated addictive screen use specifically and its impact on suicidality.<sup>114</sup> The study followed nearly 4,300 U.S. children, starting at age 9–10, over a period of four years.

---

<sup>106</sup> Deposition of Genoveva Descalzo (Rough), July 18, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 61:11-63:8; Exhibit. 4 (GOOG-3047MDL-03080564 at GOOG-3047MDL-03080577).

<sup>107</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 80:25-83:6, Exhibit 5 (GOOG-3047MDL-00809552 at \*12, produced natively)

<sup>108</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 85:6-86:21.

<sup>109</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 90:16-91:10.

<sup>110</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 91:25-94:3, Exhibit. 6 (GOOG-3047MDL-02938010 at \*7, produced natively)

<sup>111</sup> Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), at 94:4-14; 99:9 -22, Exhibit. 6 (GOOG-3047MDL-02938010 at \*9, \*12, produced natively)

<sup>112</sup> Kishida MDL Report at p. 6.

<sup>113</sup> Lembke MDL Report at p. 25-26.

<sup>114</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. JAMA, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>.

Instead of measuring total screen time, they tracked patterns of addictive use—like compulsive checking, distress when separated from devices, and using screens to escape.<sup>115</sup>

- ii. The authors found that addictive usage is common, around ~30% with social media.<sup>116</sup> Youth with high or rising addictive use were 2–3 times likelier to report suicidal thoughts or behaviors than those with low, stable use.<sup>117</sup> These youth also had more symptoms of depression, anxiety, aggression, and attention problems.<sup>118</sup>
- iii. In this study, the adverse impacts of digital media including social media were not about “screen time” alone but also other patterns of addictive use.<sup>119</sup>
- j. Dr. Auerbach states an objection to time use surveys as a marker of problematic use, “It is well documented that youth do not accurately recall time spent on social media, typically vastly inflating the total time (e.g., Ellis, 2019). Moreover, total time spent online does not in any way reflect the nuanced way that youth interact with social media (e.g., scrolling, posting, watching videos, reading, etc.).”<sup>120</sup>
- i. The Ellis article,<sup>121</sup> to which Auerbach refers, does not state that people over-estimate the time spent on social media platforms. Importantly, the data in Table 3 does not provide information on whether the lack of correlation is due to overestimation of use time, underestimation of use time, or both.

---

<sup>115</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>, at pp. E2-E3.

<sup>116</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>, at p. E5.

<sup>117</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>, at pp. E2-E3.

<sup>118</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>, at pp. E2-E3.

<sup>119</sup> Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, e257829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>, at p. E5.

<sup>120</sup> Auerbach MDL Rebuttal Report, at p. 9.

<sup>121</sup> Ellis, D. A., Davidson, B. I., Shaw, H., & Geyer, K. (2019). Do smartphone usage scales predict behavior? *International Journal of Human-Computer Studies*, 130, 86–92.

- ii. Regardless, in my clinical experience, those with addiction, including those with social media addiction, tend to *underestimate* both time spent and adverse consequences.
- k. Dr. Tucker writes, “... this newly defined condition has brought with it significant and fundamental concerns regarding the distinction between high involvement versus pathological involvement in video games, since intense video game playing often involves patterns of gaming that are characterized by high involvement but that are non-pathological.”<sup>122</sup>
  - i. As with alcohol, social media use likely often displays a “J-shaped curve” wherein moderate use may have no negative impact on health, while excessive use is bad.<sup>123</sup> Other addictive substances and behaviors can be salutary in moderation and bad in excess, not just social media.
  - ii. As with alcohol or any other substance, we make the diagnosis of a use disorder/addiction not solely on quantity or frequency, but on the “4 C’s”, that is to say, the maladaptive patterns of use, with or without tolerance and withdrawal. As such, there is no conflict or discrepancy here between current definitions of social media addiction and other forms of addiction. Current measures of social media addiction are easily adapted from existing definitions of addiction.
- l. Dr. Tucker writes, “YouTube has become an important tool for teaching and learning, including academic work (homework, school assignments, attending seminars or online classes, online research) as well as occupational work (e.g., job-seeking and online training or research for a summer job or internship) (Clayborne et al. 2025; Maziriri 2020; Orús 2016; Pratama 2020; Schaper 2014; Shen 2023; Smith 2010).”<sup>124</sup> Google’s own internal documents show that YouTube interferes with learning, as detailed in my opening report, and many schools have blocked access to YouTube.<sup>125</sup>
- m. Dr. Tucker writes, “Another major problem with the idea of ‘social media addiction’ is that maladaptive use of social media may be a symptom of another underlying, recognized disorder. For example, psychiatric and behavioral disorders have emerged as potential predictors of ‘problematic use’ of the internet (PUI), indicating the likelihood that in many cases, adolescent mental health problems may be primary and PUI secondary, rather than PUI being primary and mental health problems being secondary (Kardefelt-Winther 2014).”<sup>126</sup>

---

<sup>122</sup> Tucker MDL Report, at p. 8.

<sup>123</sup> Twenge, J.M., & Campbell, W.K. (2019). Media Use Is Linked to Lower Psychological Well-Being: Evidence from Three Datasets. *Psychiatric Quarterly*, 90(2), 311-331. <https://doi.org/10.1007/s11126-019-09630-7>.

<sup>124</sup> Tucker MDL Report at p. 16.

<sup>125</sup> GOOG-3047MDL-00874191 at \*28 (produced natively); GOOG-3047MDL-00665175 at \*4 (produced natively).

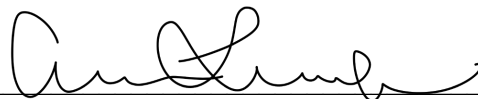
<sup>126</sup> Tucker MDL Report at p. 9.



- i. The presence of another underlying psychiatric disorder does not contradict the idea of social media addiction or the harm it can cause to mental health. Kids with mental health disorders are more vulnerable to social media addiction and are also more likely to experience adverse psychiatric symptoms as a result of social media addiction. Just as with other addictions, social media addiction can exacerbate mental health disorders and vice versa in a feed-forward cycle.<sup>127</sup>
- ii. Even where social media addiction is secondary to a pre-existing mental illness, it's still a harm of Defendants' products.
- n. Given the known potential for harm of social media to youth, Defendants should warn youth consumers and their parents about the risks, which include but are not limited to addiction, depression, and suicidal ideation.

The undersigned hereby certifies their understanding that they owe a primary and overriding duty of candor and professional integrity to help the Court on matters within their expertise and in all submissions to, or testimony before, the Court. The undersigned further certifies that their report and opinions are not being presented for any improper purpose, such as to harass, cause unnecessary delay, or needlessly increase the cost of litigation.

Executed on: July 30, 2025

  
\_\_\_\_\_  
Anna Lembke, M.D.

---

<sup>127</sup> Lembke MDL Report at p. 84-85.

# Anna Lembke, M.D. Report

## EXHIBIT A

*Curriculum Vitae*

**Anna Lembke, M.D.**

Professor of Psychiatry and Behavioral Sciences  
Medical Director of Addiction Medicine  
Stanford University School of Medicine  
Department of Psychiatry and Behavioral Sciences  
401 Quarry Road, Stanford, CA, 94305  
Office: 650 725-9570 Fax: 650 725-8048  
alembke@stanford.edu

**Education and Training**

1985-1989	Yale University (BA, Humanities; <i>summa cum laude</i> ) New Haven, CT
1989-1990	University of Beijing (Mandarin Chinese) Beijing, China
1992-1995	Stanford University School of Medicine (MD) Stanford, CA
1995-1997	Residency, Pathology Stanford University School of Medicine, Stanford, CA
1997-1998	Internship, Internal Medicine Highland Hospital, Alameda, CA
1998-2000	Residency, Psychiatry Stanford University School of Medicine, Stanford, CA
2000-2002	Fellowship in Mood Disorders, Psychiatry and Behavioral Sciences Stanford University School of Medicine, Stanford, CA

**Honors and Awards**

1989	<i>Summa cum laude</i> in Humanities Yale University
1989	Outstanding Contributor to Community Life Yale University
1989	Yale-China Fellowship Yale University
1995	Outstanding Teacher in Structural Biology Stanford University School of Medicine

1999	Outstanding Research in Severe Mental Illness Janssen Scholar
2000	Travel Scholarship Medical Education and Research Foundation (MERF)
2000	Outstanding Research in Severe Mental Illness American Psychiatric Association
2002	Laughlin Fellowship American College of Psychiatrists
2009	Travel Scholarship Alcohol Medical Scholars Program
2011	Travel Scholarship Association of Medical Education, Research, Substance Abuse
2013	Faculty Fellowship Stanford University School of Medicine
2014	Excellence in Academic Teaching Stanford University School of Medicine
2015	Chairman's Clinical Innovation Award Stanford University School of Medicine
2017	Distinguished Visiting Professorship Johns Hopkins Bayview, Department of Internal Medicine
2018	Distinguished Flexner's Dean Lecturer Vanderbilt University School of Medicine
2018	Distinguished Marcel Malden Lecturer Tacoma, Washington
2018	Distinguished Alpha Omega Alpha Visiting Professorship University of Kansas School of Medicine
2018	Distinguished Alumni Award Evanston Township High School, Evanston, IL
2018	Excellence in Academic Teaching Award Stanford University School of Medicine

2019	Distinguished Baldwin Lecturer The Accreditation Council for Graduate Medical Education (ACGME)
2019	Distinguished Tector Lecturer 69th Annual Course for Family Physicians, Montreal, Canada
2019	Distinguished James Platt White Memorial Lecturer Buffalo, New York OB/GYN Society
2019	Distinguished Crowley Lecturer Lucile Packard Children's Hospital, Stanford University
2019	Distinguished University of Tampa Honors Symposium Lecturer University of Tampa, Florida
2019	Distinguished Evelyn G. Keever Bioethics Day Lecturer Eastern Virginia Medical School
2020	Fellowship Training Directors Award American Society of Addiction Medicine
2020	Irma Bland MD Certificate of Excellence in Teaching Residents American Psychiatric Association
2021	Distinguished Alpha Omega Alpha Visiting Professorship University of Nevada, Reno School of Medicine
2021	Hazelden Betty Ford Foundation Humanitarian Award Hazelden Betty Ford Foundation, Rancho Mirage, California
2022	Chairman's Polymath Award Stanford University School of Medicine
2022	Distinguished Freedman Memorial Lecturer University of Chicago
2022	Distinguished Callahan Lecturer Case Western Reserve University
2023	Distinguished Reeves Warm MD Lecturer University Hospitals, Cleveland, Ohio
2023	38 <sup>th</sup> Distinguished Feldman Lecturer Edmonton, Alberta, Canada

**Academic and Clinical Appointments, Stanford University**

2003-2010 Instructor Department  
Department of Psychiatry and Behavioral Sciences (9/03-4/10)

2010-2017 Assistant Professor  
Department of Psychiatry and Behavioral Sciences (5/10-4/17)

2012-present Chief, Addiction Medicine Dual Diagnosis Clinic  
Department of Psychiatry and Behavioral Sciences

2013-2018 Founding Program Director, Addiction Medicine Fellowship  
Department of Psychiatry and Behavioral Sciences  
Accredited by the American Board of Addiction Medicine

2018-present Founding Program Director, Addiction Medicine Fellowship  
Department of Psychiatry and Behavioral Sciences  
Accredited by ACGME

2016-2021 Courtesy Appointment  
Department of Anesthesiology and Pain Medicine

2017-present Medical Director, Addiction Medicine  
Stanford Health Care and Stanford University Hospital

2017-2021 Associate Professor  
Department of Psychiatry and Behavioral Sciences (7/17-6/21)

2020-present Director, Taube Youth Addiction Initiative  
Department of Psychiatry and Behavioral Sciences

2021-present Professor  
Department of Psychiatry and Behavioral Sciences

**Other Previous Employment**

1991-1992 Bilingual Teacher (grades K-8), State Certified in Chinese (Mandarin)  
Healy Elementary School, Chicago, IL

1989-1990 English Teacher, Yali Middle School  
Changsha, China

**Medical Licensure and Specialty Board Certification**

1995 California medical license #A62241

- 2003           Diplomate, American Board of Psychiatry and Neurology  
Certificate #51988; recertified 2/18/2013
- 2012           Diplomate, American Board of Addiction Medicine  
Certificate #2012288; certified 12/15/2012 -12/31/2022
- 2013           DEA-X waived to prescribe buprenorphine products
- 2021           Diplomate, American Board of Preventive Medicine; Certificate #61-  
17111; certified 01/01/2021 - Exp date 12/31/2030

**Educational Leadership, Stanford University**

- 2003-2005     Chair, Curriculum Committee  
Department of Psychiatry and Behavioral Sciences  
Stanford University School of Medicine
- 2009-present   Course Director, CME-accredited monthly Stanford seminar series for  
community physicians - “Closing the Gap: Moving towards Best Practices  
in Psychiatry”
- 2012-2014     Principal Organizer and Lecturer of the free Buprenorphine Certification  
Course and CURES registration for Stanford University
- 2013-present   Program Director, Addiction Medicine Fellowship  
Department of Psychiatry and Behavioral Sciences  
Stanford University School of Medicine
- 2014           Expert Consultant, Alcohol and Women Task Force  
Office of the Vice Provost for Student Affairs, Stanford University
- 2014-2016     Annual Medical Student Town Hall Meetings on Wellness and  
Professionalism (Issues of Substance Use and Addiction)  
Office of the Dean of the School of Medicine, Stanford University
- 2015-2016     Expert Consultant, Alcohol and Other Drug (AOD) Subcommittee of the  
Mental Health and Well-Being Advisory Committee  
Stanford University
- 2016-2024     Chair, Addiction Medicine Task Force  
Stanford University School of Medicine  
(Goal: create a new curriculum for addiction/safe opioid prescribing)
- 2017-2022     Committee on Professionalism  
Stanford University School of Medicine

2021-present Collegiate Recovery Advisory Committee  
Stanford University

**Teaching and Mentoring, Stanford University**

2002-present Course Director, Addiction Medicine, Stanford University School of Medicine

2009-present Course Director, Stanford CME series “Closing the Gap in Psychiatry”

2012-present Course Lecturer, Substance Use Disorders, Stanford Child Psychiatry Fellowship

2012-2020 Course Lecturer, Substance Use Disorders, Stanford Palliative Care Fellowship

2012/'14/'16 Biennial lecture on addiction medicine to Stanford undergraduates as part of the Hum Bio Molecular and Cellular Physiology 256 seminar

2021-present Course Lecturer on Addiction, Stanford undergraduate Psychology 101

**Clinical Supervision (weekly year round), Stanford University**

2002-2018	Inpatient Psychiatry	Med Students, Residents, Fellows
-----------	----------------------	----------------------------------

2010-present	Addiction Med/Dual Dx Clinic	Med Students, Residents, Fellows
--------------	------------------------------	----------------------------------

2013-2018	Pain and Addiction Clinic	Pain Fellows
-----------	---------------------------	--------------

**Addiction Medicine Fellowship, Director, Stanford University**

2013-14	Stacie Solt, MD, Emergency Medical and Addiction Medicine, now at San Mateo Medical Center, San Mateo, CA
---------	---

2014-15	Mitika Kanabar, MD, Family Medicine Physician and Addiction Medicine, now at Southern California Permanente Medical Group, Lancaster, CA
---------	--

2015-16	Chinyere Ogbonna, MD, Family Medicine, Psychiatry, and Addiction Medicine, now Medical Director of Chemical Dependency Services at Kaiser Permanente, San Jose, CA
---------	--

2016-17	Rachel Sussman, MD, Family Medicine and Addiction Medicine, now Assistant Professor at Stanford School of Medicine and Indian Health Center/O'Connor, San Jose, CA
---------	--



- 2017-18 Amer Raheemullah, MD, Internal Medicine and Addiction Medicine, now Assistant Professor and Director of the Inpatient Addiction Medicine Consult Service at Stanford School of Medicine, Stanford, CA
- 2017-18 Anusha Chandrakanthan, MD, Family Medicine and Addiction Medicine, now Adjunct Clinical Assistant Professor in Addiction Medicine at Stanford University School of Medicine, Stanford, CA, and Staff Physician at Valley Homeless Health, San Jose, CA
- 2018-19 Huiqiong Deng, MD, PhD, Psychiatry and Addiction Medicine, now Assistant Professor in Addiction Medicine at Stanford University School of Medicine, Stanford, CA
- 2018-19 Michael Polignano, MD, Psychiatry and Addiction Medicine, now Assistant Professor in Addiction Medicine at Stanford University School of Medicine, Stanford, CA
- 2019-20 Ori Benhamou, MD, Psychiatry and Addiction Medicine, Stanford Addiction Medicine Fellowship, Stanford, CA
- 2019-20 Nathaniel Lepp, MD, Family Medicine and Addiction Medicine, Stanford Addiction Medicine Fellowship, Stanford, CA
- 2020-2021 Matilde Fredrickson, DO, Warren Yamashita, MD, Stanford Addiction Medicine Fellowship, Stanford, CA
- 2021-2022 Hussain Abdullah, MD, Thomas Bottyan, MD, Sara Cohen-Fournier, MD, Jasser Khairallah, DO, Depinder Singh, MD, Steven Tate, MD, Lucia Tome, MD, Stanford Addiction Medicine Fellowship, Stanford, CA
- 2022-2023 Martin Binesh, MD, Bailee Jacobsen, DO, Henry Moss, DO, Mastaneh Nikraves, MD, Gabriela Ruchelli, MD, Stanford Addiction Medicine Fellowship, Stanford, CA
- 2023-2024 Nicolas Garel, MD, Asaf Jacobs, MD, Connie Chen, MD, Diana Chen, MD, Steven Marabondo, MD, Nicole Steinmuller, MD

**MedScholars Advisor, Stanford University**

- 2016 MedScholar Advisor for Inbar Raber, *Qualitative Assessment of Clerkship Students' Perspectives of Pain and Addiction Curriculum at Stanford*, Stanford University School of Medicine, Stanford, California
- 2017 MedScholar Advisor for Alex Ball, *Developing the Addiction Curriculum at Stanford*, Stanford University School of Medicine, Stanford, California

2019 MedScholar Advisor for Emily Keamy-Minor, *Alcohol Screening for Patients Receiving Prescriptions for Benzodiazepines and Opioids*, Stanford University School of Medicine, Stanford, California

**Dissertation/Masters Review Committees, Stanford University/Palo Alto Consortium**

2016 Dissertation Advisor and Review Committee Member for Jennifer Bielenberg, *Addiction and Stigma*, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2017 Dissertation Chair and Review Committee Chair for Shelby Schwartz, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2018 Dissertation Chair and Review Committee Chair for Julia Yasser, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2020 Dissertation Committee, Sarah Krasner, *Gender Differences in Cannabis Vaporizer Use*, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2020 Dissertation Committee, Rebecca Rothberg, *Harm Reduction and Addiction Treatment*, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2020 Dissertation Chair and Review Committee Chair for Benjamin Greenberg, *Shared Medical Appointments for Buprenorphine Prescribing for Individuals with Opioid Use Disorder: A Qualitative Study*, PsyD Consortium, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

2020 Master's Thesis Advisor for Enrique Cazares-Navarro, *Trends of Benzodiazepine Use in the United States Among Older Adults: Clinical visits that include a benzodiazepine (Xanax, Valium, Klonopin) prescription have persisted between 2015 and 2019 among older adults in the continental United States, despite growing evidence of benzodiazepine harms*, Community Health and Prevention, Stanford Prevention Research Center, Stanford University School of Medicine, Stanford, California

**Professional Association Membership**

- 2011-2016 Member, Association of Medical Education and Research in Substance Abuse (AMERSA)
- 2011-present Member, American Society of Addiction Medicine (ASAM)
- 2011-present Member, California Society of Addiction Medicine (CSAM)
- 2019-present Member, American Psychiatric Association (APA)
- 2019-present Member, American College of Academic Addiction Medicine (ACAAM)

**Regional, National, and International Service**

**Professional Societies and Advisory Boards and Committees**

- 2012-2015 Facilitator, California Society of Addiction Medicine (CSAM) Annual Conference, San Francisco, California
- 2013-2014 Advisor, American Board of Addiction Medicine Practice Improvement and Performance Measures Action Group (PIPMAG)
- 2013-2018 Advisor, American Board of Addiction Medicine Fellowship Development Working Group
- 2013-2019 Board Member, Medical Education and Research Foundation (MERF) for the Treatment of Addiction
- 2013-2020 Member, Public Policy Committee, CSAM
- 2014-2020 Member, California Society of Addiction Medicine Education Committee
- 2014-2018 Member, California Society of Addiction Medicine Conference Planning
- 2015-2019 Board Member, California Society of Addiction Medicine
- 2015-2016 Representative, American Society of Addiction Medicine PCORI Workshop: *Long-Term Use of Opioids for Chronic Pain*
- 2015-2017 Representative, Appointed by Governor Jerry Brown to the Research Advisory Panel of California, January 2015
- 2015-2019 Member, Public Policy Committee, American Society of Addiction Medicine

- 2015-2016 Chair, Conference Planning Committee, California Society of Addiction Medicine Annual Conference
- 2016-2017 Vice-Chair, Conference Planning Committee, California Society of Addiction Medicine Annual Conference
- 2016-2020 Member, Physicians for Responsible Opioid Prescribing (PROP)
- 2016-2018 President, Addiction Medicine Fellowship Directors Association (AMFDA)
- 2019 Advisor, Task force for The Center on Addiction (a merger between Partnership for Drug Free Kids and CASA Columbia)
- 2019-2023 Board Member, American College of Academic Addiction Medicine
- 2020-2023 Member, American College of Academic Addiction Medicine (ACAAM) Lifelong Learning and Self-Assessment Committee
- 2021-present Member, Opioid Industry Documents Archive National Advisory Committee (NAC)
- 2023-2024 Member, Recovery Expert Advisory Panel (REAP) on behalf of the Ministry of Mental Health and Addiction, Alberta, Canada
- 2022-2023 Member, Advisory Council, National Fentanyl Awareness Day
- 2023-present Board Member, State of the Nation Project

### **Editorial Work**

- 2003-2004 Guest Editor, *Academic Psychiatry*, Issue on Women in Academia
- 2013-2014 Reviewer, *How to Find Quality Addiction Treatment*, CASA Columbia
- 2014-2017 Associate Editor, *Addiction Science and Clinical Practice (ASCP)*

### **Ad-Hoc Manuscript/Report Review**

*Academic Psychiatry*  
*Addiction*  
*Addiction Science and Clinical Practice*  
*Agency for Healthcare Research and Quality (AHRQ)*  
*American Journal of Psychiatry*  
*Annals of Internal Medicine*

*Archives of General Psychiatry*  
*Asian Journal of Psychiatry*  
*Biological Psychiatry*  
*Bipolar Disorder*  
*British Medical Journal*  
*Cambridge University Press*  
*Culture, Medicine, and Psychiatry*  
*Current Biomarker Findings*  
*Drugs: Education, Prevention & Policy*  
*Expert Opinion on Pharmacotherapy*  
*Expert Review of Neurotherapeutics*  
*General Hospital Psychiatry*  
*Healthcare: The Journal of Delivery Science and Innovation*  
*Johns Hopkins University Press*  
*Journal of Addiction Science and Clinical Practice*  
*Journal of Affective Disorders*  
*Journal of the American Medical Association*  
*Journal of Psychiatric Research*  
*Journal of Studies on Alcohol and Drugs*  
*Medical Journal of Australia*  
*New England Journal of Medicine*  
*New Recovery Community Institutions*  
*Pain Medicine*  
*Psychological Medicine*  
*Rationality and Society*  
*Sociologic Forum*  
*Substance Abuse*  
*Substance Use and Misuse*

### **Current Funding**

2/23-1/25	<p>Funder: Stanford Institute for Human Centered Artificial Intelligence 2022  Seed Grant Award, \$75,000  Title: Addicted by Design: An Investigation of How AI-fueled Digital  Media Platforms Contribute to Addictive Consumption  Role: Co-Principal Investigator (Co-PI: Johannes Eichstaedt)</p>
7/20-6/25	<p>Funder: Health Resources and Services Administration (HRSA),  \$1,452,178, 0.1 Calendar  Title: Addiction Medicine Fellowship  Purpose: Stanford University Department of Psychiatry proposes to  expand its existing Addiction Medicine Fellowship by two fellows in  medically underserved communities in Santa Clara County  Role: Principal Investigator/Project Director (Co-PI: Louie)</p>

**Previous Funding**

1/00-1/01	Funder: American Psychiatric Association and Eli Lilly Training Grant Title: Facial Emotion Processing in Patients with Bipolar Disorder Role: PI
7/01-7/02	Funder: National Institute of Mental Health Research Fellowship Title: Facial and Vocal Emotion Processing in Mood Disorders Role: PI
11/01-11/03	Funder: National Institute of Mental Health Title: Systematic Treatment Enhancement Program for Bipolar Disorder Role: Site-Investigator (PI: Sachs, Mass General)
12/08-12/10	Funder: National Institute of Mental Health Title: HPA Axis in Psychotic Depression, 2 RO1 MH050604-12 Role: Co-Investigator (PI: Schatzberg)
10/09-10/14	Funder: National Institute on Drug Abuse Title: Extended Treatment for Smoking Cessation, R01 DA017441 Role: Co-Investigator (PI: David)
7/11-7/14	Funder: National Institute of Health Title: Genetics of Symptomatology and Treatment Response in Depression Role: Investigator (PI: Murphy)
1/12-12/15	Funder: Michael Alan Rosen Foundation Title: Screening and Brief Intervention for Substance Misuse/Abuse Role: Co- PI (Co-PI: Humphreys)
11/13-11/14	Funder: Stanford Center at Peking University (SCP KU) Title: Narratives of Addiction in Contemporary China Role: PI
1/14-1/15	Funder: Peter F. McManus Charitable Trust, SPO #112718 Title: Exploring Physician Opioid Prescribing Using a Novel Approach to Data Mining of Medical Records Role: PI
1/14-1/15	Funder: American Board of Addiction Medicine/Conrad N. Hilton Foundation Title: 2014 Next Generation Award for Adolescent Substance Use Prevention Role: PI

- 11/14-11/15 Funder: Stanford Center for Continuing Medical Education (SCCME)  
Title: Prescription Drug Abuse: Compassionate Care for a Complex Problem  
Role: PI
- 1/15-1/16 Funder: American Board of Addiction Medicine/Conrad N. Hilton Foundation  
Title: 2015 Next Generation Award for Adolescent Substance Use Prevention  
Role: PI
- 7/16-7/17 Funder: Stanford Center for Continuing Medical Education (SCCME)  
Title: Tapering Patients off of Chronic Opioid Therapy  
Role: PI
- 11/2017 Funder: VA Center for Innovation to Implementation  
Title: The Hidden Role of Benzodiazepines in the Prescription Drug Epidemic  
Role: Small grant awardee
- 10/15-10/20 Funder: National Institute of Alcohol Abuse & Alcoholism  
Title: CNS Deficits: Interaction of Age & Alcoholism, R01 AA005965  
Purpose: Determine the impact of heavy, chronic alcohol use on brain structure and function, and the capacity of the brain to heal in a period of abstinence.  
Role: Co-Investigator (MPI: Pfefferbaum and Zahr)
- 7/18-7/21 Funder: Department of Governmental Relations, Stanford Hospital/Clinics  
Title: Addiction Medicine Peer Mentor Program  
Purpose: To explore the feasibility and safety of integrating a peer mentor into the Addiction Medicine Dual Diagnosis Clinic Treatment Team  
Role: Co-Investigator (MPI: Raheemullah and Gallagher)
- 12/19-11/22 Funder: Stanford Center for Health Education ("SCHE")  
Title: Psychology of Addiction and Recovery  
Purpose: Stanford University Department of Psychiatry in partnership with SCHE and Getsmarter proposes to create an online professional education course on addiction medicine for learners around the world.  
Role: Academic Director
- 7/20-6/24 Funder: NIDA, \$1,050,000, 0.1 Calendar  
Title: Western Node of NIDA Clinical Trials Network  
Purpose: Oregon Health Sciences University, Stanford University/Palo Alto VA, UC San Francisco, and the San Francisco Health Department propose to serve as a node in NIDA's national network which generates and support randomized clinical trials of drug addiction treatment.

Role: Co-Investigator (MPI: Korthuis and Humphreys)

## **Scholarly Work**

### **Books**

**Lembke, A.** *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Johns Hopkins University Press, November 15, 2016 (Amazon Bestseller)

**Lembke, A.** *Dopamine Nation: Finding Balance in the Age of Indulgence*, Dutton Penguin Random House, August 21, 2021 (*New York Times* Bestseller, *Los Angeles Times* Bestseller, *Washington Post* Bestseller, Audibles Bestseller, Amazon Bestseller, translated into 35 languages, more than a million copies sold worldwide)

**Lembke, A.** *The Official Dopamine Nation Workbook*, Dutton Penguin Random House, October 1, 2024

### **Peer-Reviewed Online Stanford EdX CME Courses**

**Lembke, A.** *Prescription Drug Misuse and Addiction: Compassionate Care for a Complex Problem*, produced by the Stanford Center for Continuing Medical Education, <https://www.edx.org/course/prescription-drug-misuse-and-addiction-compassionate-care-for-a-complex-problem?index=undefined>

**Lembke, A.** *Tapering Patients Off of Chronic Opioid Therapy*, produced by the Stanford Center for Continuing Medical Education, <https://www.edx.org/bio/anna-lembke>  
<https://stanford.cloud-cme.com/course/courseoverview?P=0&EID=20909>

**Lembke, A.** *The Psychology of Addiction and Recovery*, produced by the Stanford Center for Health Education in collaboration with Getsmarter and 2u, [https://sche-online.getsmarter.com/presentations/lp/stanford-sche-psychology-of-addiction-and-recovery-online-short-course/?ef\\_id=c:434032772062\\_d:c\\_n:g\\_ti:kwd-536821850850\\_p: k:%2Bstanford%20%2Bpsychology\\_m:b a:101946842798&gclid=EAIaIQobChMI-bif96zQ6wIVhCmzAB22uAwAEAAAYASAAEgKyQfD\\_BwE&gclsrc=aw.ds](https://sche-online.getsmarter.com/presentations/lp/stanford-sche-psychology-of-addiction-and-recovery-online-short-course/?ef_id=c:434032772062_d:c_n:g_ti:kwd-536821850850_p: k:%2Bstanford%20%2Bpsychology_m:b a:101946842798&gclid=EAIaIQobChMI-bif96zQ6wIVhCmzAB22uAwAEAAAYASAAEgKyQfD_BwE&gclsrc=aw.ds)

### **Peer-Reviewed Original Research Articles**

1. **Lembke A**, Ketter TA. Impaired Recognition of Facial Emotion in Mania *American Journal of Psychiatry* 2002; 159(2):302-4.
2. Menon V, Levitin DJ, Smith BK, **Lembke A**, Krasnow BD, Glazer D, Glover GH, McAdams S. Neural Correlates of Timbre Change in Harmonic Sounds *Neuroimage*



2002; 17(4):1742-54.

3. Janenawasin S, Wang PW, **Lembke A**, Schumacher M, Das B, Santosa CM, Mongkolkeep J, Ketter TA. Olanzapine in Diverse Syndromal and Subsyndromal Exacerbations of Bipolar Disorders *Bipolar Disorders* 2002; 4(5):328-34.
4. DeBattista C, **Lembke A**, Solvason HB, Ghebremichael R, Poirier J. A Prospective Trial of Modafinil as an Adjunctive Treatment of Major Depression. *Journal of Clinical Psychopharmacology* 2004; 24(1):87-90.
5. **Lembke A**, Miklowitz D, Otto M, Wisniewski S, Sachs N, Thase M, Ketter TA. Psychosocial Service Utilization by Patients with Bipolar Disorders. *Journal of Psychiatric Practice* 2004; 10(2):81-87.
6. Miklowitz, D.J., Otto, M.W., Wisniewski, S.R., Araga, M., Frank, E., Reilly-Harrington, N.A., **Lembke, A.**, Sachs, G.S. Psychotherapy, Symptom Outcomes, and Role Functioning Over One Year among Patients with Bipolar Disorder. *Psychiatric Services* 2006; 57(7):959-65.
7. **Lembke, A.**, Bradley, K.A., Henderson, P., Moos, R. Harris, A.H.S., Alcohol Screening Scores and the Risk of New-Onset Gastrointestinal Illness or Related Hospitalization. *Journal of General Internal Medicine*, 2011; 26(7):777-782.
8. Che, A., Gomez, R., Keller, J., **Lembke, A.**, Tennakoon, L., Cohen, G., Schatzberg, A., The relationships of positive and negative symptoms with neuropsychological functioning and their ability to predict verbal memory in psychotic major depression. *Psychiatry Research*, 2012; 198(1):34-8.
9. Harris, A.H.S., **Lembke, A.**, Henderson, P., Gupta, S., Moos, R., & Bradley, K.A. Risk of Future Trauma Based on Alcohol Screening Scores: A Two-Year Prospective Cohort Study Among US Veterans. *Addiction Science & Clinical Practice*, 2012; 7(1):6.
10. **Lembke, A.**, Gomez, R., Tenakoon, L., Keller, J., Cohen, G., Williams, G. H., Kraemer, F.B., Schatzberg, A.F., The mineralocorticoid receptor agonist fludrocortisone, differentially inhibits pituitary-adrenal activity in humans with psychotic major depression. *Psychoneuroendocrinology*, 2012, 38(1):115-121.
11. Del Re, A.C., Gordon, A.K., **Lembke, A.** Harris, A.H.S., Utilization of Topiramate to Treat Alcohol Use Disorders in the Veterans Health Administration. *Addiction Science and Clinical Practice*, 2013;8(12).
12. Harris, AHS, Ellerbe, L, Reeder, RN, Bowe, T, Gordon, AJ, Hagedorn, H, Oliva, E, **Lembke, A**, Kivlahan, D, Trafton, JA. Pharmacotherapy and Alcohol Dependence: Perceived treatment barriers and action strategies among Veterans Health Administration service providers. *Psychological Services*, 2013; 10(4):410-419.

13. Kelley, R., Garrett, A., Cohen, J., Gomez, R., **Lembke, A.**, Keller, J., Reiss, A.L., Schatzberg, A. Altered brain function underlying verbal memory encoding and retrieval in psychotic major depression. *Psychiatry Research: Neuroimaging*, 2013; 38 (1):115-121.
14. **Lembke, A.** 2013. Sacrifice, stigma, and free-riding in Alcoholics Anonymous (AA): A new perspective on behavior change in self-help organizations for addiction. In: University, S. (ed.). [https://www.chapman.edu/research/institutes-and-centers/institute-religion-economics-society/\\_files/guest-lectures/lembke-paper.pdf](https://www.chapman.edu/research/institutes-and-centers/institute-religion-economics-society/_files/guest-lectures/lembke-paper.pdf).
15. Yuen KW, Garner JP, Carson DS, Keller J, **Lembke A**, Hyde SA, Kenna HA, Tennakoon L, Schatzberg AF, Parker KJ. Plasma oxytocin concentrations are lower in depressed vs. healthy control women and are independent of cortisol. *Journal of Psychiatric Research*, 2014; 51:30-6.
16. Schatzberg AF, Keller J, Tennakoon L, **Lembke A**, Williams G, Kraemer FB, Sarginson JE, Lazzeroni LC, Murphy GM. HPA axis genetic variation, cortisol and psychosis in major depression. *Molecular Psychiatry*, 2014; 19(2):220-7.
17. Maclean D, Gupta S, **Lembke A**, Manning CD, Heer J. Forum77: An Analysis of an Online Health Forum Dedicated to Addiction Recovery. *ACM Computer-Supported Cooperative Work (CSCW)*, <https://idl.cs.washington.edu/papers/forum77/>; 2015; Role: Data analysis, manuscript preparation. \*Best Paper Honorable Mention.
18. **Lembke, A.**, Cheng, Niushen. A Qualitative Study of Treatment-Seeking Heroin Users in Contemporary China, *Addiction Science and Clinical Practice*, 2015;10:23.
19. Chen, J., Humphreys, K., Shah, N.H., **Lembke, A.** Distribution of Opioids by Different Types of Medicare Prescribers, *JAMA Internal Medicine*, 2016; 176(2):259-261.
20. Haug, N.A., Bielenberg, J., Linder, S. H., **Lembke, A.** Assessment of provider attitudes toward #naloxone on Twitter. *Substance Abuse*, 2016; 37(1):35-41.
21. **Lembke, A.**, Chen, J. Use of Opioid Agonist Therapy for Medicare Patients in 2013. *JAMA Psychiatry*, 2016;73(9):990-992. doi:10.1001/jamapsychiatry.2016.1390
22. Keller, J., Gomez, R., Williams, G., **Lembke, A.**, Lazzeroni, L., Murphy, G.M. Jr, Schatzberg, A.F. HPA Axis in Major Depression: Cortisol, Clinical Symptomatology, and Genetic Variation Predict Cognition, *Molecular Psychiatry*, Feb; 19(2): 220–227. doi: 10.1038/mp.2016.120 2016. Role: Study physician, manuscript preparation.
23. Stein, M., Kanabar, M., Anderson, B.J., **Lembke, A.**, Bailey, G.L. Reasons for Benzodiazepine Use Among Persons Seeking Opioid Detoxification, *Journal of*

*Substance Abuse Treatment*, 2016; September; 68: 57–61.

*Role: Data analysis, manuscript preparation.*

24. Leyro, T. M., Crew, E. E., Bryson, S. W., **Lembke, A.**, Bailey, S. R., Prochaska, J. J., Henriksen, L., Fortmann, S. P., Killen, J. D., Killen, D. T., Hall, S. M., David, S. P. Retrospective analysis of changing characteristics of treatment-seeking smokers: implications for further reducing smoking prevalence. *BMJ* 2016; 6 (6).

*Role: Study physician, manuscript preparation.*

25. Laude, J. R., Bailey, S. R., Crew, E., Varady, A., **Lembke, A.**, McFall, D., David, S. P. (2017). Extended treatment for cigarette smoking cessation: A randomized control trial. *Addiction*. <https://doi.org/10.1111/add.13806>

*Role: Study physician, manuscript preparation.*

26. Raber, I., Ball, A., Papac, J., Aggarwal, A., Sussman, R., Basaviah, P., Newmark, J. **Lembke, A.** Qualitative Assessment of Clerkship Students' Perspectives of the Topics of Pain and Addiction in their Preclinical Curriculum, *Academic Psychiatry*, 2018;42:664, doi: 10.1007/s40596-018-0927-1

27. Azad, **Lembke, A.** et al, Patterns of Opioid and Benzodiazepine Use in Opioid-Naïve Patients with Newly Diagnosed Low Back and Lower Extremity Pain, *Journal of General Internal Medicine*, 2020, 35(1):291-297. doi: 10.1007/s11606-019-05549-8.

*Role: Data interpretation, manuscript preparation*

28. Haug, N. A., Morimoto, E. E., **Lembke, A.** Online mutual-help intervention for reducing heavy alcohol use, *Journal of Addictive Diseases*, 2020. <https://doi.org/10.1080/10550887.2020.1747331>

29. Deng, H., Benhamou, O., **Lembke, A.** Gabapentin dependence and withdrawal requiring an 18-month taper in a patient with alcohol use disorder: a case report, *Journal of Addictive Diseases*, published online March 30, 2021. <https://www.tandfonline.com/doi/full/10.1080/10550887.2021.1907502>

30. Raheemullah, A., **Lembke, A.** A Buprenorphine Induction Without Opioid Withdrawal: A Case Series of 15 Opioid-Dependent Inpatients Induced on Buprenorphine Using Microdoses of Transdermal Buprenorphine, *American Journal of Therapeutics*, 2021; 28 (4): E504-E508.

31. Raheemullah A, Deng H, Fenno LE, **Lembke A.** Inpatient Addiction Medicine Consultation on Readmission Rates and Length of Stay. *J Addiction Prevention*. 2022;10(1)

32. Deng, H., Raheemullah, A., Fenno, L. E., **Lembke, A.** A telehealth inpatient addiction consult service is both feasible and effective in reducing readmission rates. *Journal of Addictive Diseases*. 2022, DOI: [10.1080/10550887.2022.2090822](https://doi.org/10.1080/10550887.2022.2090822)

33. Garel, N., Tate, S., Nash, K., **Lembke, A.** Trends in Hallucinogen-Associated Emergency Department Visits and Hospitalizations in California, USA from 2016–2022, *Addiction*. July 11, 2024 <https://doi.org/10.1111/add.16432>
34. Greenberg, B., Oft, A. C., Lucitt, L., Haug, N. A., & **Lembke, A.** (2024). Qualitative exploration of the psychological dimensions of telehealth shared medical appointments (SMAs) for buprenorphine prescribing. *Journal of addictive diseases*, 42(1), 14–23. <https://doi.org/10.1080/10550887.2022.2123669> PMID 36374272
35. Nateghi Haredasht F, Fouladvand S, Tate S, Chan MM, Yeow JJJ, Griffiths K, Lopez I, Bertz JW, Miner AS, Hernandez-Boussard T, Chen CA, Deng H, Humphreys K, **Lembke A**, Vance LA, Chen JH. Predictability of buprenorphine-naloxone treatment retention: A multi-site analysis combining electronic health records and machine learning. *Addiction*. 2024 Jun 24. doi: 10.1111/add.16587. PMID: 38923168.
36. Gupta, R., Chernesky, J., **Lembke, A.**, Michaels, D., Tomori, C., Greene, J. A., Alexander, G. C., Koon, A. D. The opioid industry's use of scientific evidence to advance claims about prescription opioid safety and effectiveness. *Health Affairs Scholar*. 2024; 2 (10)
37. Nicolas Garel, MD, MSc, Kyle T. Greenway, MD, MSc, Paola Lavin, MD, MSc, William Pike, PhD, Rebecca Hyde, PhD, Didier Jutras-Aswad, MD, MSc, Steven D. Tate, MD, MSc, and **Anna Lembke**, MD. Increased Risks of Major Cardiac Adverse Events in Stimulant Use Disorder as Compared with Other Substance Use Disorders: A Propensity-score Matching Cohort Study. *Journal of Addiction Medicine*. 2025
38. Carpenter, K. A., Nguyen, A. T., Smith, D. A., Samori, I. A., Humphreys, K., **Lembke, A.**, Kiang, M. V., Eichstaedt, J. C., Altman, R. B. Which social media platforms facilitate monitoring the opioid crisis? *PLOS Digital Health*. 2025; 4 (4): e0000842

### Peer-Reviewed Perspectives, Case Reports, and Reviews

1. **Lembke A.** A Piece of My Mind: "A letter from the foreign legion" *JAMA*, 1996; 276(21):1704.
2. Crowley RS, **Lembke A**, Horoupian DS. Isolated Meningeal Vasculopathy Associated with Clostridium Septicum Infection *Neurology* 1997; 48(1):265-7.
3. Barry JJ, Huynh N, **Lembke A.** Depression in Individuals with Epilepsy *Current Treatment Options in Neurology*, 2000; 2(6):571-585.
4. **Lembke A.** "Mind" and "Brain" *American Journal of Psychiatry*, 2001; 158(11):1939-1940.

5. DeBattista C, Trivedi M, Kern J, **Lembke A**. The Status of Evidence-Based Guidelines and Algorithms in the Treatment of Depression *Psychiatric Annals*, 2002; 32(11):658-663.
6. Sommer B, Fenn H, P. P, DeBattista C, **Lembke A**, Wang P, Flores B. Safety of Antidepressants in the Elderly. *Expert Opinion on Drug Safety*, 2003; 2(4):367-383.
7. **Lembke A**. A Friday in the Life of an Academic Psychiatrist *Academic Psychiatry*, 2003; 27(3):214-215.
8. Barry J.J., **Lembke A.**, Bullock K.D. Current Status of the Utilization of Antiepileptic Treatments in Mood, Anxiety and Aggression: Drugs and devices. *Clinical EEG and Neuroscience*, 2004; 35(1):4-13.
9. **Lembke, A**. Why is this Special Issue on Women's Professional Development in Psychiatry Necessary? *Academic Psychiatry*, 2004 28(4):275-277.
10. DeBattista, C., **Lembke, A.**, Update on Augmentation of Antidepressant Response in Resistant Depression. *Current Psychiatry Report*, 2005; 7(6):435-40.
11. **Lembke A**, Johnson K, DeBattista C. Depression and Smoking Cessation: Does the Evidence Support Psychiatric Practice? *Neuropsychiatric Disease and Treatment*, 2007; 3(4):1-7.
12. DeBattista, C, **Lembke, A**. Psychotic Major Depression: Phenomenology and the Pursuit of Optimal Treatment. *Primary Psychiatry*, 2008; 15(4):59-64.
13. Schatzberg, A.F., Solvason, H.B., Keller, J., **Lembke, A**. Antidepressant Interventions in the HPA system. *Journal of Affective Disorders*, 2008; 107(Suppl.1):S40-S41.
14. **Lembke, A**. Depressed Smokers: A Guide to Treatment Based on the Evidence. *Depression: Mind and Body*, 2009;4(3):96-101.
15. **Lembke, A**. Optimal Dosing of Lithium, Valproic Acid, and Lamotrigine in the Treatment of Mood Disorders. *Primary Psychiatry*, 2009; 16(10):33-38.
16. **Lembke, A.**, Humphreys, K., Moderation Management: A Mutual-Help Organization for Problem Drinkers who are not Alcohol Dependent. *Journal of Groups in Addiction and Recovery*, 2012; 7(2-4):130-141.
17. **Lembke, A**. Time to Abandon the Self-Medication Hypothesis in Patients with Psychiatric Disorders. *The American Journal of Drug and Alcohol Abuse*, 2012, 38(6):524-529.
18. **Lembke, A**. Why doctors prescribe opioids to known opioid abusers. *New England*

*Journal of Medicine*. October 25, 2012; 367(17):1580-1581

19. **Lembke, A.** From Self-Medication to Intoxication: Time for a Paradigm Shift. *Addiction*, 2013; 108(4):670-671.
20. Humphreys, K., **Lembke, A.** Recovery oriented policies and care systems in the U.K. and the USA. *Drug and Alcohol Review*, 2014; 33 (1):13-18.
21. **Lembke, A.**, Humphreys, K. A Call to Include People with Mental Illness and Substance Use Disorders Alongside ‘Regular’ Smokers in Smoking Cessation Research, *Tobacco Control*, 2015;25(3):261-2.
22. **Lembke, A.**, Humphreys, K., Newmark, J. Weighing the Risks and Benefits of Chronic Opioid Therapy, *American Family Physician*, 2016; 93(12):982-990.
23. Ogbonna, C., **Lembke, A.** Tapering Patients Off of Benzodiazepines, *American Family Physician*, 2017 Nov 1;96(9):606-608.
24. Prekupec, M.P., Sussman, R.S., Sher, Y., **Lembke, A.** Relapse on ketamine followed by severe and prolonged withdrawal: A cautionary case and review of potential medical therapies. *J Nat Sci*, 3(10):e450, 2017.
25. **Lembke, A.** The Opioid Epidemic is a Symptom of our Faltering Health Care System, *The British Medical Journal*, published online October 30, 2017 <http://blogs.bmj.com/bmj/2017/10/31/anna-lembke-the-opioid-epidemic-is-a-symptom-of-our-faltering-healthcare-system/>
26. **Lembke, A.** Why Addiction Should Be Considered a Disease, *Judges' Journal*, 2018 Jan; Volume: 57 Issue: 1
27. **Lembke, A.**, Papac, J., Humphreys, K. Our Other Prescription Drug Problem, *NEJM*, 2018; 378(8):693-695.
28. **Lembke, A.**, Humphreys, K. The Opioid Epidemic as a Watershed Moment for Physician Training in Addiction Medicine, *Academic Psychiatry*, 2018; 42(2):269-272.
29. Harrison, T. K., Kornfeld, H., Aggarwal, A. K., & **Lembke, A.** Perioperative Considerations for the Patient with Opioid Use Disorder on Buprenorphine, Methadone, or Naltrexone Maintenance Therapy. *Anesthesiology Clinics*, 2018; 36(3), 345–359. <https://doi.org/10.1016/j.anclin.2018.04.002>
30. **Lembke, A.** Ottestad, E., Schmiesing, C. Patients Maintained on Buprenorphine for Opioid Use Disorder Should Continue Buprenorphine Through the Perioperative Period, *Pain Medicine*, 2019; 20(3):425-428. <https://doi.org/10.1093/pm/pny019>



31. Raheemullah, A., **Lembke, A.** Initiating Opioid Agonist Treatment for Opioid Use Disorder in the Inpatient Setting: A Teachable Moment, *JAMA Internal Medicine*, 2019; 179(3):427-428.
32. Chou, R., Ballantyne, J., **Lembke, A.**, Rethinking Opioid Dose Tapering, Prescription Opioid Dependence, and Indications for Buprenorphine, *Annals of Internal Medicine*, 2019; doi:10.7326/M19-1488
33. Raheemullah, A., **Lembke, A.** Buprenorphine Induction Without Opioid Withdrawal: A Case Series of 15 Opioid-Dependent Inpatients Induced on Buprenorphine Using Microdoses of Transdermal Buprenorphine. *American Journal of Therapeutics*, 2019
34. **Lembke, A.**, Tapering Long Term Opioid Therapy, *American Family Physician*, Volume 101, Number 1, January 1, 2020
35. Haug, N. A., Morimoto, E. E., **Lembke, A.** Online mutual-help intervention for reducing heavy alcohol use, *Journal of Addictive Diseases*, 2020. <https://doi.org/10.1080/10550887.2020.1747331>
36. Azad, **Lembke, A.** et al, Patterns of Opioid and Benzodiazepine Use in Opioid-Naïve Patients with Newly Diagnosed Low Back and Lower Extremity Pain, *Journal of General Internal Medicine*, 2020, 35(1):291-297. doi: 10.1007/s11606-019-05549-8.
37. **Lembke, A.** Unsafe Supply: Why Making Controlled Prescription Drugs Available for Unsupervised Use Will Not Target the Syndemic of HIV, Hepatitis C, Overdose, and COVID-19, *Journal of Studies on Alcohol and Drugs*, 2020 Sep;81(5):564-565. <http://dx.doi.org/10.15288/jsad.2020.81.564>
38. Deng, H., Benhamou, O., **Lembke, A.** Gabapentin dependence and withdrawal requiring an 18-month taper in a patient with alcohol use disorder: a case report, *Journal of Addictive Diseases*, published online March 30, 2021. <https://www.tandfonline.com/doi/full/10.1080/10550887.2021.1907502>
39. Bielenberg, J., Swisher, G., **Lembke, A.**, Haug, N., A systematic review of stigma interventions for providers who treat patients with substance use disorders, *Journal of Substance Abuse Treatment* (2021), <https://doi.org/10.1016/j.jsat.2021.108486>

#### Peer-Reviewed Book Chapters

1. Barry JJ, **Lembke A**, Huynh N: Affective Disorders in Epilepsy, in *Psychiatric Issues in Epilepsy: A Practical Guide to Diagnosis and Treatment*. Edited by Ettinger AB, Kanner AM. Philadelphia, Lippincott Williams and Wilkins, 2001, pp 45-72
2. Ketter T, Wang P, Dieckmann N, **Lembke A**, Becker O, Camilleri C: Brain Anatomic Circuits and the Pathophysiology of Affective Disorders, in *Brain*



- Imaging in Affective Disorders*. Edited by Soares J. New York, Marcel Dekker, Inc., 2002, pp 79-118
3. Ketter T, Wang P, **Lembke A**, Sachs N: Physiological and Pharmacological Induction of Affect, in *The Handbook of Affective Science*. Edited by RJ D, KR S, HH G. New York, Oxford University Press, 2002, pp 930-962
  4. Constantino MJ, **Lembke A**, Fischer C, Arnow BA: Adult Depression: Characteristics, Burdens, Models, and Interventions, in *Mental Disorders of the New Millenium, vol 1: Behavioral Issues*. Edited by Plante RG, Praeger Publishers, 2006, pp. 139-166
  5. Barry JJ, **Lembke A**, Gisbert PA, Gilliam F. Affective Disorders in Epilepsy, in *Psychiatric Issues in Epilepsy*. Edited by Ettinger AB, Kanner AM. Philadelphia, Lippincott Williams & Wilkins, 2007, pp 203-247
  6. **Lembke A**, DeBattista C. Review of a Randomized-Controlled Trial of Adjunctive Bupropion in the Treatment of SSRI-Induced Sexual Dysfunction, in *Progress in Neurotherapeutics and Neuropsychopharmacology*, vol 2. Edited by Cummings JL, Cambridge University Press, 2007, pp 187-192
  7. **Lembke, A**, Humphreys, K. Alcoholics Anonymous, in *Encyclopedia of Drugs, Alcohol & Addictive Behavior*, 3<sup>rd</sup> Edition. Edited by Korsmeyer P and Kranzler H, Macmillan Reference USA, 2008, pg. 122
  8. Cohen, G., **Lembke, A**. Childhood Behavior and Later Substance Use, in *Encyclopedia of Drugs, Alcohol & Addictive Behavior*, 3<sup>rd</sup> Edition. Edited by Korsmeyer P and Kranzler H, Macmillan Reference USA, 2008
  9. **Lembke A**, Humphreys K. Chapter 26: Substance Use Disorder Presenting as a Mood Disorder in *How To Practice Evidence Based Psychiatry: Basic Principles and Case Studies*. Edited by Taylor CB, APPI, Washington, D.C., 2009 , pp 233-246
  10. **Lembke, A.**, Humphreys, K. Moos, R. Diagnosis, Development, and Treatment of Substance Use Disorders among Adolescents and Young Adults, in *Stanford School of Medicine Handbook of Developmental Psychiatry*. Edited by Steiner, H, NY, Jossey/Bass/Wiley, 2010, pp. 365-396
  11. **Lembke, A.**, & Humphreys, K. What self-help organizations tell us about the syndrome model of addiction. In Shaffer HJ (Editor-in-Chief), LaPlante DA and Nelson SA (Associate Editors), *APA Addiction Syndrome Handbook: Vol. 2. Recovery, Prevention, and other Issues*, Washington, DC: American Psychological Association, 2012, pp. 157–168

12. **Lembke, A.**, Stanford, M. Clinical Management of Alcohol Use Disorders in the Neurology Clinic, Handbook of Clinical Neurology, Vol 125, 3rd Series, *Alcohol and the Nervous System* 1E, Edited by Sullivan, EV Pfefferbaum, A, Elsevier, 2014
13. Hall R, **Lembke A.** Substance Use Disorders in Adolescence. In: Steiner H (Ed) with Hall R. *Treating Adolescents* (2nd Edition). Westford, Massachusetts: Wiley, 2015, pp 141-164
14. **Lembke, A.**, Alcoholism and drug abuse, sociology of. In S. Martin (Ed.), *The SAGE encyclopedia of alcohol: Social, cultural, and historical perspectives*. (Vol. 1, pp. 98-104). Thousand Oaks, CA: SAGE Publications, Inc. 2015 doi: <http://dx.doi.org/10.4135/9781483331096.n27>
15. **Lembke, A.**, Moderation management. In S. Martin (Ed.), *The SAGE encyclopedia of alcohol: Social, cultural, and historical perspectives*. (Vol. 13, pp. 872-874). Thousand Oaks, CA: SAGE Publications, Inc. 2015 doi: <http://dx.doi.org/10.4135/9781483331096.n334>
16. **Lembke, A.**, Humphreys, K. Self-Help Organizations for Substance Use Disorders, in *Oxford Handbook on Substance Use Disorders*, Edited by Sher, KJ, Oxford University Press, 2016
17. Ogbonna C, **Lembke A.** Alcohol and substance use and co-occurring behaviors. In Roberts LW (editor). *University Student Mental Health: A Guide for Psychiatrist, Psychologists, and Leaders Serving in Higher Education*. Arlington, VA: American Psychiatric Publishing, Inc., 2018.
18. **Lembke, A.**, Raheemullah, A. Addiction and Exercise. In Noordsy DL, (editor). *Lifestyle Psychiatry: Using Exercise, Diet and Mindfulness to Manage Psychiatric Disorders*. Washington DC: American Psychiatric Publishing, 2019

#### Other Publications

1. **Lembke, A.** A Psychosocial Approach to Postpartum Depression *Psychiatric Times* 2002; XIX(6):11
2. **Lembke, A.** A downside of electronic health records: How 90 percent of Merced County, California patients became Albanian, *Scope*, the Stanford University School of Medicine blog, October 11, 2012.
3. **Lembke, A.** To reduce use, educate teens on the risks of marijuana and prescription drugs, *Scope*, the Stanford University School of Medicine blog, October 18, 2012.

4. **Lembke, A.** Why doctors prescribe opioids to patients they know are abusing them, *Scope*, the Stanford University School of Medicine blog, October 25, 2012.
5. **Lembke, A.** How to make alcoholics in recovery feel welcome this holiday season, *Scope*, the Stanford University School of Medicine blog, December 10, 2012.
6. **Lembke, A.** The DSM-V Gets it Right. *The Fix*, April 11, 2013.
7. **Lembke, A.** Inside the Mind of an Addiction Medicine Physician, *The Fix*, December 4, 2014.
8. **Lembke, A.** Unmet Expectations: Testifying before Congress on the Opioid Abuse Epidemic, *Scope*, the Stanford University School of Medicine blog, April 29, 2015
9. **Lembke, A.** Ask an Expert. Should I go off Suboxone? If so, how? *The Fix*, April 29, 2015
10. **Lembke, A.** Ask an Expert: Should I Go Through Detox if I'm Not Sure I Want to Be Abstinent? *The Fix*, May 10, 2016
11. **Lembke, A.** Prince, opioids and the rest of us: America needs a massive public education campaign to help people hooked on Percocet and related drugs, *New York Daily News Op-Ed*, May 11, 2016
12. **Lembke, A.** Be sure the check the PDMP before prescribing controlled medications, *Psychiatric News*, June 17, 2016  
<http://psychnews.psychiatryonline.org/doi/full/10.1176/appi.pn.2016.pp6b2>
13. **Lembke, A.** The Compassionate Doctor, the Narcissistic Injury, and the Prescription Opioid Epidemic. *The Fix*, Nov 30, 2016  
<https://www.thefix.com/compassionate-doctor-narcissistic-injury-and-prescription-opioid-epidemic>
14. **Lembke, A.** Commentary provided in response to Joseph Bernstein's "Not the Last Word: Viscosupplementation, Opioid Overuse, and the Excesses of Empathy", *Clin Orthop Relat Res* (2017) 475:2369–2372
15. **Lembke, A.** Purdue Pharma is Done Promoting Opioids: Here's Why It's a Big Deal, *Fortune Magazine*, Feb 2018 <http://fortune.com/2018/02/13/purdue-pharma-oxycotin-opioid-crisis/>
16. **Lembke A.** Can medical marijuana replace opioids to relieve cancer pain? *HemOnc Today*. 2018;19(24):13.

17. **Lembke, A.**, Eyal, N. Is Social Media Hijacking our Minds?, *Pairagraph: A hub of discourse between pairs of notable individuals*, <https://www.pairagraph.com/dialogue/efa31e60b1e2498588ddc10d074b494c> , 2021
18. Ballanytne, Jane C.; Butler, Judy; Coelho, Paul; Franklin, Gary M.; Fugh Berman, Adriane; Gelfand, Stephen; Johnson, Chris; Juurlink, David; Kolodny, Andrew; **Lembke, Anna**; Orr, Rosemary; Streltzer, Jon; Sullivan, Mark D.; Tauben, David J. Tully, Betts; Von Korff, Michael. Letter from Physicians for Responsible Opioid Prescribing (PROP) to the American Medical Association (AMA) -- RE: AMA's Opposition to Dose & Duration Guidance for Opioid Prescribing. <https://www.bmj.com/content/372/bmj.m4901/rr-2021>
19. **Lembke, A.**, Digital Addictions Are Drowning Us in Dopamine, *The Wall Street Journal*, August 13, 2021 <https://www.wsj.com/articles/digital-addictions-are-drowning-us-in-dopamine-11628861572>
20. **Lembke, A.** Can Bay Area entrepreneurs provide a tech solution to video game addiction? *San Francisco Examiner*, September 3, 2021 <https://www.sfexaminer.com/news/can-bay-area-entrepreneurs-provide-a-tech-solution-to-video-game-addiction/>
21. **Lembke, A.** Californians don't need another addiction crisis. Reject Prop. 27: Permitting online sports betting would increase access to a behavior that wreaks havoc on vulnerable individuals. *The San Jose Mercury News*, October 11, 2022. <https://www.mercurynews.com/2022/10/11/opinion-californians-dont-need-another-addiction-crisis-reject-prop-27/>
22. **Lembke, A.** Too much pleasure causes pain. *Institute of Art and Ideas News*, March 20, 2023, [https://iai.tv/articles/too-much-pleasure-causes-pain-anna-lembke-auid-2421?\\_auid=2020](https://iai.tv/articles/too-much-pleasure-causes-pain-anna-lembke-auid-2421?_auid=2020)
23. **Lembke, A.** Guest Editorial: History Repeats Itself: Psychedelics Are Promoted Today the Way Opioids Were Promoted in the Early 2000s. *The ASAM Weekly*, January 22, 2024. <https://www.asam.org/publications-resources/the-asam-weekly/detail/2024/01/22/guest-editorial--history-repeats-itself-psychedelics-are-promoted-today-the-way-opioids-were-promoted-in-the-early-2000s>
24. **Lembke, A.**, Rausch, Z. Haidt, J., Applying The Bradford Hill Criteria To Social Media Use and Adolescent Mental Health, *After Babel Substack*, <https://www.afterbabel.com/p/bradford-hill-social-media>

### **National and International Government Testimony**

1. Apr 2015 Invited expert testimony for the Congress of the United States, House of Representatives, Committee on Energy and Commerce, Subcommittee on Oversight

and Investigations hearing entitled “Combatting the Opioid Abuse Epidemic: Professional and Academic Perspectives,” Washington, D.C. <https://democrats-energycommerce.house.gov/committee-activity/hearings/hearing-on-combatting-the-opioid-abuse-epidemic-professional-and>

2. Sep 2015 Invited expert testimony for the White House Symposium, “Medicine Responds to the Need for Addiction Expertise”, The Office of National Drug Control Policy, The White House, Washington, D.C.  
<https://obamawhitehouse.archives.gov/the-press-office/2015/09/18/white-house-drug-policy-office-hosts-%E2%80%9Cmedicine-responds-addiction%E2%80%9D>
3. Sep 2016 Invited expert testimony for the United States Senate, Committee of Homeland Security and Government Affairs, Permanent Subcommittee on Investigations, on the overuse and overprescribing of prescription opioids, “Combatting the Opioid Epidemic: A Review of Anti-Abuse Efforts by Federal Authorities and Private Insurers”, Washington, D.C.
4. Oct 2016 Invited expert testimony for the White House Symposium, “Academic Medical Centers as Centers of Excellence in Addiction Medicine”, The Office of National Drug Control Policy, The White House, Washington, D.C.  
<http://www.abms.org/news-events/white-house-symposium-briefing-session-on-addiction/>
5. May 2017 Invited expert consultation on curbing the opioid epidemic to Nevada’s Office of the Governor
6. May 2017 Invited expert consultation on curbing the opioid epidemic to Kentucky’s Office of the Governor
7. Sep 2017 Invited expert testimony for the Congress of the United States, House of Representatives, “Addiction Medicine: The Urgent Need for Trained Physicians”, hosted by The Addiction Medicine Foundation and co-sponsored by the Congressional Prescription Drug Abuse Caucus, the Congressional Addiction Treatment and Recovery Caucus, and the Congressional Bipartisan Heroin Task Force <https://www.youtube.com/watch?v=y6kBoQckmHw>
8. Jan 2018 Invited expert testimony in federal court, Judge Dan Polster presiding, in the multi-district litigation lawsuit against opioid manufacturers and distributors <https://www.law360.com/articles/1008010/inside-the-opioid-mdl-s-big-closed-door-hearing>
9. Mar 20, 2019 Invited expert testimony for the Joint Hearing of Senate and General Assembly Health and Human Services Committees on “Opioids, cannabis, and vaping: Using science to protect public health,” State of Rhode Island

10. Jan 18, 2022, Invited expert testimony for the Kentucky circuit court judges on the role of the opioid industry in promoting misleading messages about opioids. This presentation was given at the invitation of the “Science and the Law” initiative at the American Association for the Advancement of Science (AAAS), the largest multidisciplinary scientific society in the world, and a 501(c)(3) non-governmental organization, in conjunction with the Administrative Office of Kentucky Courts.
11. February 2022, Invited expert testimony for elected representatives in Edmonton, Canada at the invitation of the Ministerial Assistant to the Associate-Minister of Mental Health and Addictions on curbing the opioid epidemic.
12. February 2022, Invited expert testimony for U.S. Senate Judiciary Committee, Hearing Examining Kids’ Online Safety
13. March 2023 Testimony for Commerce Finance and Policy Committee, the Minnesota House of Representatives and the Minnesota State Senate Examining Kids’ Online Safety

**Medical Expert Witness (last 5 years)**

1. People v. Philip Morris Ingram, (Cal. Super. Ct., Docket 62-144622)
2. National Prescription Opiate Litigation, MDL No. 2804 (N.D. Ohio, Case 1:17-md-2804)
3. In Re Opioid Litigation, (Suffolk County, New York Supreme Court, Index No. 400000/2017), relating to Case Nos. County of Suffolk, 400001/2017; County of Nassau, 400008/2017; and New York State, 400016/2018
4. Cabell County Commission and City of Huntington, West Virginia, (The Cabell Huntington Community) v. AmerisourceBergen Drug Corporation, Cardinal Health, Inc., and McKesson Corporation, No. 1:17-op-45053-DAP and No. 1:17- op-45054
5. People of the State of California v. Purdue Pharma, L.P., et al., No. 30-2014-00725287-CU-BT-CXC
6. Miner v. Olsen, et al. (arbitration)
7. The County of Lake, Ohio v. CVS Health Corporation., et al, No. 18-op-45032 and 18-op-45079
8. The City and County of San Francisco, et al., vs. Purdue Pharma L.P., et al., No. 18-cv-07591-CRB

**Selected Invited Lectures, Domestic and International (2015-present)**

1. Feb 2015 *Drug Addiction and the Internet: Justin's Story*, Psychiatry Grand Rounds, Alta Bates Summit Medical Center, Berkeley, California
2. Feb 2015 *Pain, Addiction, and the Drug-Seeking Patient: Compassionate Care for a Complex Problem*, Santa Clara Valley Medical Center CME Symposium on Addiction, Santa Clara, California
3. Mar 2015 *The Prescription Drug Epidemic: Technology as Both Friend and Foe*, Northern California Psychiatric Society Annual CME Conference, Monterey, California
4. Sept 2015 *The Prescription Drug Epidemic: Preserving Compassion for the Drug-Seeking Patient*, Mills Peninsula Health Services CME Lecture Series, San Mateo, California
5. Sept 2015 *The Prescription Drug Epidemic: Compassionate Care for a Complex Problem*, Psychiatry Grand Rounds Speaker, Oregon Health Sciences University, Portland, Oregon
6. Oct 2015 *Chronic Pain and Addiction: The Compassionate Doctor, The Narcissistic Injury, and the Primitive Defense*, California Society of Addiction Medicine, State of the Art Annual Conference, San Francisco, California
7. Oct 2015 *Prescription Drug Misuse and the Doctor Patient Relationship*, Keynote Speaker, American Correctional Healthcare Services Association, Tailoring Health Care for Inmates, Sacramento, California
8. Oct 2015 *Addiction Medicine: Managing Prescription Drug Misuse and Addiction*, Emerging and Innovative Trends in Psychiatry and Behavioral Health, Stanford University School of Medicine, Stanford, California
9. Oct 2015 *The Prescription Drug Epidemic: How Doctors are Complicit, and How We Can Do Better*, Regional Medical Center of San Jose CME Lecture Series, San Jose, California
10. Dec 2015 *Exploring Dual Diagnosis: What came first, the substance use disorder or the psychiatric disorder, and does it even matter?* Mills Peninsula Health Services CME Lecture Series, San Mateo, California
11. Jan 2016 *The Prescription Drug Epidemic and the Doctor Patient Relationship*, San Francisco General Hospital Primary Care Grand Rounds, San Francisco, California
12. Mar 2016 *Protecting our Developing Youth: Adolescent Addiction, Prevention and Recovery*, Keynote Speaker, Adolescent Counseling Services, East Palo Alto,



California

13. Mar 2016 *Opioid Therapy for Chronic Non-Cancer Pain*, 2016 Third Annual Addiction Medicine Conference, San Jose Valley Medical Center, San Jose, California
14. Mar 2016 *The Prescription Drug Epidemic*, Keynote Speaker, Stanford Annual Adjunct Faculty Retreat, Palo Alto, California
15. Mar 2016 *Chronic Opioids: Shifting the Paradigm*, Keynote Speaker, Samaritan Center & Health Career and Training Center, Lebanon, Oregon
16. Jun 2016 *The Compassionate Doctor, the Drug Seeking Patient, the Narcissistic Injury, and the Primitive Defense*, Keynote Speaker, Cedar Sinai Annual Psychiatric Conference, Los Angeles, California
17. Sep 2016 *Myths and Facts about Opioids*, DCRx: The DC Center for Rational Prescribing; <http://doh.dc.gov/dcrx>, Washington, DC
18. Sep 2016 *Getting Patients Off of Opioids*, DCRx: The DC Center for Rational Prescribing; <http://doh.dc.gov/dcrx>, Washington, DC
19. Sep 2016 *Pharmacotherapy for Substance Use Disorders*, Department of Psychiatry Annual CME Conference, Stanford University School of Medicine, Stanford, California
20. Oct 2016 *State of the Art Treatment for Substance Use Disorders and other Addictions*, Keynote Speaker, 3-part lecture series, Beijing University, #6 Hospital, Beijing, China
21. Nov 2016 *Prescription Drug Misuse and the Doctor Patient Relationship*, Psychiatry, San Mateo County Health Systems Grand Rounds, San Mateo, California
22. Jan 2017 *Effective Strategies for the Non-Adherent Buprenorphine Patient: Rational Monitoring and Contingency*, California Society of Addiction Medicine, Treating Addiction in the Primary Care Safety Net, Webinar
23. Feb 2017 *How to safely taper patients off high dose prescription opioids for chronic pain*, Keynote Speaker, California Center for Care Innovations, Treating Addiction in the Primary Care Safety Net, Los Angeles, California
24. Feb 2017 *The Worst Opioid Epidemic in U.S. History: How did we get here, and how can we get out?* Stanford Parents Weekend Back to School, Stanford, California
25. Feb 2017 *When Pain Treatment Becomes Addiction Treatment*, American Psychological Association Annual Meeting, San Francisco, California

26. Feb 2017 *Parallel Crises: The Over and Under Prescription of Opioids*, American Association of Medical Colleges (AAMC) Webinar
27. Mar 2017 *How Doctors Contributed to the Opioid Epidemic, and What We Can Do to Fix It*, Intermountain Health Care Book Club Speaker for *Drug Dealer, MD*, Intermountain Health Care, Salt Lake City, Utah
28. Mar 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Culture and Politics of Mental Health, Anthropology 1737-1020, Professor Tomas Matza, University of Pittsburg, Pittsburg, Pennsylvania
29. Mar 2017 *The Worst Opioid Epidemic in U.S. History: How did we get here, and how can we get out?* Santa Cruz Health Care Initiative, Santa Cruz, California
30. Mar 2017 *The Canary in the Coal Mine: The Prescription Drug Epidemic as a Symptom of a Faltering Health Care System* Valley Care Medical, Pleasanton, California
31. Mar 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Northern California Psychiatric Society, Napa Valley, California
32. Apr 2017 *Pharmacotherapy for Addictive Disorders*, Alta Bates Grand Rounds, Alta Bates Hospital Berkeley, California
33. Apr 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Stanford TEDx, Stanford, California
34. Apr 2017 Invited speaker, 6th Annual *Health Technology Forum Innovation Conference: Common Good!* Stanford University School of Medicine, Stanford, California
35. Apr 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Keynote Speaker, 8th Annual Lloyd C. Elam Symposium, Meharry Medical College, Nashville, Tennessee
36. Apr 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Keynote Speaker, Association of Contextual Behavioral Sciences (ACBS), Chicago, Illinois
37. May 2017 *The Worst Opioid Epidemic in U.S. History: How did we get here, and how can we get out?* Stanford Health Matters, Stanford, California
38. May 2017 *The Compassionate Doctor, the Suffering Patient, and the Prescription Drug Epidemic*, Central California Alliance for Health (the Alliance), Merced,

California

39. May 2017 *The Compassionate Doctor, the Suffering Patient, and the Prescription Drug Epidemic*, Janus of Santa Cruz, Seaside, California
40. May 2017 *Invisible Forces Driving the Opioid Epidemic: From Disability Reform to Illness Narratives*, Keynote Speaker, OPG 6th Annual Pain Conference Agenda, Ashland, Oregon
41. May 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Internal Medicine Residency Program Invited Visiting Professor and Grand Rounds Speaker, Johns Hopkins Bayview Medical Center, Baltimore, Maryland
42. Jun 2017 *Invisible Forces Driving the Opioid Epidemic: From Disability Reform to Illness Narratives*, Keynote Speaker, PharmedOut Annual Conference, Georgetown University Medical Center, Washington, DC
43. Jun 2017 *Overprescribing in the Elderly: Causes, Risks, and Interventions*, Keynote Speaker at the 17th Annual California Senior Injury Prevention Educational Forum, Oakland, California
44. Sep 2017 *The Opioid Epidemic*, Keynote Speaker, Department of Labor West Coast Symposium, San Francisco, California
45. Sep 2017 *Treating Addiction without Feeding It*, Keynote Speaker, American Correctional Health Services Association (ACHSA) "Modern Challenges in Jails and Prisons", San Jose, California
46. Sep 2017 *Invisible Forces Driving the Prescription Drug Epidemic: From Disability Reform to Illness Narratives*, Keynote Speaker, The International Benzodiazepine Symposium, Redmond, Oregon
47. Sep 2017 *Reframing Medical Practice Involving Controlled Substances*, Keynote Speaker, The Association of State and Territorial Health Officials (ASTHO) 2017 Annual Conference, Washington, DC
48. Oct 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Keynote Speaker, The Patient Safety Institute for Mission Health 3rd Annual National Patient Safety Conference – Cultivating a Culture of Safety, Asheville, North Carolina
49. Nov 2017 *The Opioid Epidemic, How We Got Here, and How We Can Get Out*, Keynote Speaker, American Association of Medical Colleges, Learn, Serve, Lead, Boston, Massachusetts

50. Nov 2017 *The Opioid Fallout: Lives, Jobs and a Lost Generation*, Bloomberg News Live, The Year Ahead, Bloomberg Headquarters, New York City, New York
51. Nov 2017 *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*, Grand Rounds Speaker, Westchester Medical Center, Westchester, New York
52. Dec 2017 *The Opioid Epidemic: How We Got Here, and How We Can Get Out*, Keynote Speaker, Primary Care and Behavioral Health Integration Summit, Health Quality Partners, San Diego, California
53. Jan 2018 *How to Survive in a Dopamine Saturated World*, Psychiatry Grand Rounds, Vanderbilt University School of Medicine, Nashville, Tennessee
54. Feb 2018 *Is Marijuana a Harm Reduction Strategy?*, Stanford Psychiatry Grand Rounds, Stanford University School of Medicine, Stanford, California
55. Mar 2018 *Raising T(w)eens in a Dopamine Saturated World*, Woodside Priory High School, Woodside, California
56. Mar 2018 *Raising T(w)eens in a Dopamine Saturated World*, Sacred Heart High School, Menlo Park, California
57. Apr 2018 *The Opioid Epidemic: What Doctors and Hospitals Can Do*, California Pacific Medical Center Internal Medicine Grand Rounds, San Francisco, California
58. Apr 2018 *Adolescent Substance Abuse: Risk, Resilience, Prevention, and Treatment*, 2018 Adolescent Mental Wellness Conference, sponsored by Stanford University, Santa Clara, California
59. Apr 2018 *Drug Dealer, MD*, Keynote Speaker, STAR Trauma Recovery Center, Ohio State University Medical School, Columbus, Ohio
60. May 2018 *The Opioid Epidemic: What Doctors and Hospitals Can Do*, Alpha Omega Alpha Visiting Professorship, Psychiatry Grand Rounds, University of Kansas School of Medicine, Kansas City, Kansas
61. May 2018 *Opioids, Pain and Addiction Treatment: Pioneering Change*, Oregon Pain Guidance Annual Conference, Eugene, Oregon
62. Jun 2018 *The Opioid Epidemic, How We Got Here and How to Get Out*, Indiana Prosecuting Attorneys Council (IPAC), invited speaker, French Lick, Indiana
63. Jun 2018 *What is Addiction and How to Treat It*, Perrin's Opioid Litigation Conference, Dallas, Texas

64. Jul 2018 *Understanding the Opioid Crisis at the End of Life*, San Francisco Bay Area Hospice and Palliative Nurses Association, Stanford, California
65. Aug 2018 *The Opioid Epidemic: How We Got Here, and How to Get Out*, Apple Corporation, Cupertino, California
66. Aug 2018 Moderator, *Beyond Nature and Nurture – Social Determinants of Addiction and Health*, California Society of Addiction Medicine State of the Art Annual Conference, San Francisco, California
67. Aug 2018 *Drug Dealer, MD: The Opioid Crisis*, Apple Corporation Wellness Outreach, Cupertino, California
68. Sep 2018 *The Opioid Epidemic: How We Got Here, and How to Get Out*, Public Funds Forum, Laguna Beach, California
69. Sep 2018 *Drug Dealer, MD: The Opioid Crisis*, Baton Rouge Health District Community Service Talk and Medical Center Grand Rounds, Baton Rouge, Louisiana
70. Sep 2018 *Drug Dealer, MD: The Opioid Crisis*, Montrose Annual CME Conference, Montrose, Colorado
71. Oct 2018 *The Pleasure Pain Balance*, Los Altos High School “STEAM Week”, Los Altos, California
72. Oct 2018 *The Opioid Epidemic: From Freud to Fentanyl*, Keynote Speaker, PerformRX Pharmacy Benefits Manager Annual Conference, Orlando, Florida
73. Oct 2018 *The Opioid Epidemic: How We Got Here, Where We Are Now, and How to Get Out*, Keynote Speaker, Distinguished Lecture Series, Annual Meeting of the American Academy of Psychiatry and the Law (AAPL), Austin, Texas
74. Oct 2018 *Drug Dealer MD: The Opioid Epidemic*, Keynote Speaker, Psych Congress, Orlando, Florida
75. Dec 2018 *How to Taper Patients Off of Chronic Opioid Therapy*: 69th Annual Refresher Course for Family Physicians, Montreal, Canada
76. Jan 2019 *From Freud to Fentanyl: The Opioid Epidemic as a Symptom of a Faltering Health Care System*, Internal Medicine Grand Rounds, Santa Clara Valley Medical Center, Santa Clara, California
77. Feb 2019 *Our Other Prescription Drug Problem (Benzodiazepines and How to Taper)*, Internal Medicine Grand Rounds, San Mateo Medical Center, San Mateo, California

78. Feb 2019 *The Opioid Epidemic: How We Got Here, Where We Are Now, and How to Get Out*, National Keynote Speaker, Ohio State University Inter-Professional Summit, Columbus, Ohio
79. Feb 2019 *The Opioid Epidemic: How We Got Here, Where We Are Now, and How to Get Out*, Keynote Speaker, Pain and Addiction Summit, AT&T Conference Center/University of Texas, Austin, Texas
80. Apr 2019 *The Opioid Epidemic: From Freud to Fentanyl*, Keynote, Speaker, Geminus Community Partners Annual Conference, Merrillville, Indiana
81. Apr 2019 Invited commentator on *Deaths of Despair* for honorees Princeton Economists Ann Case and Angus Deaton, The 2019 Tanner Lectures on Human Values, Sponsored by the Office of the President and the McCoy Family Center for Ethics in Society, Stanford, California
82. Apr 2019 *The Opioid Epidemic: Where We Are Now*, Keynote speaker for the National Council on Alcoholism and Drug Abuse (NCADA) Spring Awards Luncheon, St. Louis, Missouri
83. May 2019 *The Opioid Epidemic: Where We Are Now*, Faculty presenter Stanford Sierra Camp Womens' Alumni Wellness Retreat, Fallen Leaf Lake, California
84. May 2019 *The Opioid Epidemic: From Freud to Fentanyl*, The American Psychiatric Association Annual Meeting, San Francisco, California
85. Jul 2019 *Social Media and Device Addiction*, 27th Annual Pediatric Update, Stanford University School of Medicine, Stanford, California
86. Jul 2019 *Rethinking Opioid Tapers, Buprenorphine Induction, and Perioperative Buprenorphine*, Opioid Response Network Texas Grand Rounds National Webinar Series
87. Jul 2019 *Tapering Guidance for Opioids*, National Academy of Medicine webinar <https://nam.edu/event/webinar-tapering-guidance-for-opioids-existing-best-practices-and-evidence-standards/> ; <https://nam.edu/wp-content/uploads/2019/08/Tapering-webinar-two-pager-FINAL.pdf>.
88. Aug 2019 *Medical Cannabis: Clinical Issues*, 8<sup>th</sup> Annual Navigating Spine Conference, Stanford University School of Medicine, Stanford, California
89. Nov 2019 *Tapering Opioids: Compassionate Care or Punitive Policy*, AMERSA Conference, Boston, Massachusetts
90. Dec 2019 *From Freud to Fentanyl: The Opioid Epidemic as a Symptom of our Faltering Health Care System*, Southwestern Gynecologic Assembly 54<sup>th</sup> Annual



Meeting: Patient and Provider at Their Best: Caring for Patients and Yourself, Dallas, Texas

91. Mar 2020 *Dismantling the Addiction Industrial Complex*, 13th Annual Haas Healthcare Conference, “Foresight is 2020,” San Francisco, California
92. Jun 2020, *From Freud to Fentanyl: The Opioid Epidemic as a Symptom of our Faltering Health Care System*, Alta Bates Grand Rounds, Berkeley, California
93. Aug 2020 *Cannabis: A Practical Clinical Approach*, 9<sup>th</sup> Annual Navigating Spine Conference, Stanford University School of Medicine, Stanford, California
94. Aug 2020 *What’s Next in the Opioid Epidemic: How to Taper Long-Term Opioid Therapy*, The Align Conference Evidence in Motion, online conference
95. Oct 2020 *The Opioid Epidemic, An Update ... Plus A Word on Cannabis*, James O. Johnson Orthopedic Symposium, The Kaiser Permanente Group, online conference
96. Nov 2020 *Aging and Alcohol: How Much Is Too Much?* Avenidas Town Hall, Palo Alto, California
97. Dec 2020 *Chatham House Webinar: Freedom of Thought and Opinion in the Digital Age*, The Royal Institute of International Affairs Chatham House, 10 St James's Square, London, England
98. Dec 2020 *Benzodiazepines: A Crisis Hidden in Plain Sight*, American Academy of Addiction Psychiatry, San Antonio, Texas.
99. Jan 2021 *The Impact of Technology on Mental Health*, Q & A with Microsoft Interns, online panel discussion with Tim Kendall and Jaron Lanier
100. Jan 2021 *Addiction and Technology*, online guest speaker and panelist, University of Toronto Artificial Intelligence Conference, Toronto, California
101. Jan 2021 *Physicians with Addiction: Why it Happens and How to Help*, Department of Anesthesiology, Stanford Health Care, Kaweah Delta, California
102. Feb 2021 *The Neuroscience of Addiction*, Recovery Café, San Jose, California
103. Feb 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Luxembourg Stanford Alumni Association, Luxembourg
104. Feb 2021 *Social Media: Why It’s Addictive and How to Use It in Healthier Ways*, National Association of Pediatric Nurse Practitioners, San Francisco, California
105. Mar 2021 *Social Media: Why It’s Addictive and How to Use It in Healthier Ways*,



The Royal Institute of International Affairs Chatham House, 10 St James's Square,  
London, England

106. Mar 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Alpha Omega Alpha Visiting Professorship Grand Rounds, University of Nevada Medical School (Reno)
107. Mar 2021 *The Science of Addiction: What It Is, How It Affects Our Brains, and What We Can Do About It*, Stanford University Healthy Living Class, Stanford, California
108. Mar 2021 *Alcohol Use Disorder: How Much is Too Much?* Sage Eldercare, Bay Area, California
109. Apr 2021 *Caring for Ourselves as We Care for Patients with Substance Use Disorders*, San Mateo County Health Care System Wellbeing Series, Bay Area, California
110. May 2021 *Technology: Savior or Threat: A Panel Discussion*, How the Lights Get In Festival, The Institute of Art and Ideas, London, England
111. Jun 2021 *Social Media Addiction: Why It Happens and What To Do About It*, Grand Rounds at Mercy Fitzgerald Hospital, Philadelphia
112. Oct 2021 *The Kennedy Forum: A Panel Discussion with Jonathan Haidt on the Impact of Social Media on Mental Health*
113. Oct 2021 Mental Health Alliance of San Mateo County, *Dopamine Nation: Finding Balance in the Age of Indulgence*
114. Oct 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence*, McCallie School, Chattanooga, Tennessee
115. Nov 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence* for Young Presidents Organization (YPO), Fort Worth, Texas
116. Nov 2021 Alta Bates Grand Rounds, *Dopamine Nation: Finding Balance in the Age of Indulgence*, Berkeley, California
117. Nov 2021 *Confronting Global Health Challenges*, *Dopamine Nation*, Duke University, Durham, North Carolina
118. Nov 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence* for Young Presidents Organization (YPO), Dallas, Texas
119. Feb 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence* for Stanford

Faculty Help Series Lecture

120. Feb 2022 *Digital Addictions*, IPCAP's 20th National Convention, Philippines
121. Feb 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Eckerd College, St. Petersburg, Florida
122. Feb 2022 *Digital Addictions*, Keynote, Harvard College Project for Asian and International Relations, Boston, Massachusetts
123. Mar 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Santa Cruz County Health Services Agency
124. Mar 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence* for YPO, Kansas City, Missouri
125. Mar 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, University of Chicago Grand Rounds, Freedman Memorial Lecture, Chicago, Illinois
126. Apr 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Grand Rounds for Rush Medical School, Chicago, Illinois
127. Apr 2022 Panelist for Stanford's Human Centered Artificial Intelligence Annual Conference, Stanford University, Stanford, California
128. April 2022 *Dopamine Nation and the Neuroscience of Addiction*, Lavin Event, Case Western Reserve University, Cleveland, Ohio
129. May 2022 *The Neuroscience of Addiction*, The WellHouse Keynote Address, Stanford University, Stanford, California
130. May 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Health Matters, Stanford University Medical School, Stanford, California
131. May 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Carle Addiction Medicine Grand Rounds, Illinois
132. May 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, National Association of Branch Campus Administrators, Stanford University, Stanford, California
133. May 2022 *Homelessness in California*, Panelist, SIEPR, Stanford University, Stanford, California
134. Jun 2022 *Logging into the Burden of Technology and Social Media on Mental Health*, University of Melbourne's student conference MDSC, Melbourne, Australia

135. Jul 2022 *Dopamine Nation :Finding Balance in the Age of Indulgence*, Lowcountry Mental Health Conference, Charleston, South Carolina
136. Aug 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, Psych Club of Manipal Academy of Higher Education, Manipal, Karnataka, India
137. Aug 2022. *Resisting Digital Temptations: How AI Fuels Addiction*, Human Artificial Intelligence Congressional Bootcamp, Stanford University, Stanford, California
138. Aug 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, UNSW Sydney during National Science Week, Sydney, Australia
139. Aug 2022 *Dopamine: A Practical Approach to Compulsive Overconsumption in a Reward-Overloaded World*, Kaiser Permanente Mental Health & Addiction Medicine Symposium, California
140. Oct 2022 *Dopamine in Conversation with Dr. Kevin McCauley*, Trauma and Addictions Conference, Las Vegas, Nevada
141. Oct 2022 *The Digital Age of Vulnerability: Better Social Media & Mental Health*, State University of New York Plattsburgh at Queensbury and State University of New York, Adirondack, Queensbury, New York
142. Oct 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, International Association of Orofacial Myology (IAOM), Kansas City, Missouri
143. Nov 2022 PCSS Clinical Roundtable - *Drs. Andrew Kolodny and Anna Lembke - Buprenorphine and Chronic Pain*
144. Nov 2022 *A Neuroscience Informed Approach to Compulsive Overconsumption*, Louisiana State University Psychiatry Grand Rounds, Baton Rouge, Louisiana
145. Nov 2022 *Dopamine Fasting: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine Overloaded World*, the Global Exchange Conference, Orlando, Florida
146. Nov 2022 *Dopamine Nation: Finding Balance in the Age of Indulgence*, NotMYkids Annual Breakfast, Scottsdale, Arizona
147. Nov 2022 *Opioids and Opioid Use Disorder*, American College of Academic Addiction Medicine Didactic Series
148. Nov 2022 *How to Talk to Teens about Addiction*, The Glenbard Parent Series, Chicago, Illinois

149. Dec 2022 *Translating Addiction Science to Practice and Policy: A Dialogue*, Department of Psychiatry Grand Rounds, Stanford University, Stanford, California
150. Dec 2022 *How to Talk to Teens about Addiction*, Parents' Coalition of Bay Area High Schools, San Francisco, California
151. Dec 2022 *How to Talk to Teens about Addiction* Palo Alto and Gunn High School Parent Series, Palo Alto, California
152. Feb 2023 *Radical Honesty: How Telling the Truth Changes our Brains and Promotes Recovery* Keynote Address, Last Door Recovery Society, Calgary, Alberta, Canada
153. Feb 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World* Keynote Address, Parker University Annual Chiropractic Conference, Las Vegas, Nevada
154. Mar 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World* Live Healthier Longer Summit, Naples, Florida
155. Mar 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Stanford Grad Alumni Day, Stanford, California
156. Mar 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, for Careers, Life, and Yale, New Haven, Connecticut
157. Apr 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Slovenia Talk Fit4Kid International Scientific Conference Keynote Address, Slovenia
158. Apr 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Stanford Continuing Studies, Stanford, California
159. Apr 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Science and Cocktails, Copenhagen, Denmark
160. Apr 2023 *Social Media and Children's Mental Health*, Panelist, Jewish Family Services and Common Sense Media, Palo Alto, California
161. Apr 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive*

*Overconsumption in a Dopamine-Overloaded World*, Keynote, International Institute for Trauma and Addiction Professionals, Phoenix, Arizona

162. Apr 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Keynote, Women Physicians' at Honor Health Foundation Keynote Address, Phoenix, Arizona
163. May 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, Common Ground and Sacred Heart Prep Keynote Address, Menlo Park, California
164. May 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption with a Focus on Social Media*, Dupage County Health Department, Glenelg, Illinois
165. May 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption in a Dopamine-Overloaded World*, "Change" Psychology Conference, Milan, Italy
166. Jun 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption*, University Medical Center Grand Rounds, Chicago, Illinois
167. Jun 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption*, Reeves Warm, MD Endowed Lecturer at University Hospitals in Cleveland, Ohio
168. Jun 2023 *The Potential Harm of Social Media*, Representative DeSaulnier Town Hall, California
169. Jul 2023 *A Child's Mind on Tech*, Center for Innovation and Resources, California
170. Jul 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption*, Ohio State Addiction Studies Institute Keynote Address
171. Jul 2023 *Dopamine Nation: A Neuroscience Informed Approach to Compulsive Overconsumption*, Parker Seminar Series "Neuron" Keynote Address, Dallas, Texas
172. Aug 2023 *Dopamine Nation*, The Institute of Art and Ideas, London, United Kingdom
173. Aug 2023 *The Plenty Paradox*, The Institute of Art and Ideas Panel on Desire, Struggle, and the Search for Wellbeing, London, United Kingdom
174. Aug 2023 *Addiction and Digital Media*, Human-Centered Artificial Intelligence Congressional Bootcamp, Stanford, California

175. Aug 2023 *The Impact that Technology, Social Media, and Digital Addiction Have on our Health and Wellbeing*, Dakota Medical Foundation Health and Wellbeing Summit Keynote Address, Fargo, North Dakota
176. Aug 2023 *Opioids and Opioid Use Disorder: A Review*, The American College of Academic Addiction Medicine (ACAAM) Didactic Lecture Series
177. Sep 2023 *Dopamine Fasting: An Early Intervention for Compulsive Overconsumption in the Digital Age*, California Society of Addiction Medicine (CSAM) Keynote Address, San Diego, California
178. Oct 2023 *Radical Honesty: How Telling the Truth Promotes Recovery*, International Conference for Secular AA Keynote Address
179. Oct 2023 *Substance Use Disorders and Mood Disorders*, 19th Annual Stanford Mood Disorders Education Day, Translating Emerging Treatments for Mood Disorders into Practice
180. Oct 2023 *“DOPAMINE”: A Neuroscience Informed Approach to Dopamine Fasting in the Digital Age*, U.S. Marines Commanders Huddle, Norfolk, Virginia
181. Oct 2023 *“DOPAMINE”: A Neuroscience Informed Approach to Dopamine Fasting in the Digital Age*, Lifestyle Medicine Annual Conference, Denver, Colorado
182. Nov 2023 Annual Feldman Lecturer for the 38<sup>th</sup> Feldman Lecture Series, composed of three lectures by a single scholar over the course of one day, Edmonton Canada. Feldman Lectures: 1.) The Plenty Paradox: How Abundance Has Made Us More Vulnerable to Addiction and Other Forms of Suffering; 2.) The Gap Between Evidence and Promotion: How Today’s Discourse on Cannabis and Psychedelics Echoes Two Decades of Misleading Opioid Marketing; 3.) Radical Honesty, Narcissism, and Surrender: Psychospiritual Aspects of Addiction and Recovery
183. Nov 2023 *Dopamine Nation: Finding Balance in the Age of Indulgence*, HSM+, Sao Paulo, Brazil
184. Dec 2023 *Dopamine Nation: Finding Balance in the Age of Indulgence* Genius Network, Phoenix, Arizona

#### **Media Appearances (2015-present)**

1. Apr 2015 *Public Radio International-To the Point*, hosted by Warren Olney, prescription opioid and heroin abuse in America, invited expert.
2. Oct 2015 *OnPoint*, National Public Radio, the prescription opioid epidemic, invited expert



3. Mar 2016 *Al Jazeera* live programming, the new CDC guidelines on opioid prescribing, invited expert
4. Mar 2016 *KCBS Radio*, San Francisco, the new CDC guidelines on opioid prescribing, invited expert
5. Apr 2016 *The Today Show* on NBC, NY, New York, appearance with Mehmet Oz discussing “The Opioid Epidemic”
6. May 2016 *KCBS Radio*, San Francisco, the FDA approves Probuphine, a buprenorphine implant, invited expert
7. Oct 2016 *Opioids: Last Week Tonight with John Oliver* (HBO),  
<https://www.youtube.com/watch?v=5pdPrQFjo2o>
8. Nov 2016 *Sirius XM Radio*, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop*
9. Nov 2016 *Wisconsin Public Radio’s “Central Time” Show*, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop* <http://www.wpr.org/connection-between-illicit-drugs-and-doctors>
10. Nov 2016 *The Healthcare Policy Podcast with David Introcaso*, invited podcast to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop* <http://www.stitcher.com/podcast/david-introcaso-2/the-healthcare-policy-podcast/e/what-explains-the-opioid-epidemic-dr-anna-lembke-discusses-48277528>
11. Nov 2016 *Straight Talk MD with Frank Sweeny* invited podcast to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop* <http://straighttalkmd.com/podcast/drug-dealer-md-opioid-epidemic-anna-lembke-md/>
12. Nov 2016 *Conversation on Healthcare Reach MD Radio*, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop* <http://www.chcradio.com/episode.php?id=360>
13. Nov 2016 *KALW Local Public Radio*, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It’s So Hard to Stop* <http://kalw.org/post/city-visions-how-doctors-fueled-opioid-epidemic#stream/0>
14. Nov 2016 *Forum with Michael Krasny (KQED-FM)* invited panelist to discuss “The Surgeon General’s Report: Facing Addiction in America,”  
<https://ww2.kqed.org/forum/2016/11/28/addiction-is-illness-not-a-moral-failing-says-surgeon-general/>



15. Nov 2016 *Stanford Scope 1:2:1 Podcast with Paul Costello* invited podcast to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop* <http://med.stanford.edu/news/all-news/one-to-one/2016/drug-dealer--md--how-physicians-are-fueling-the-opioid-epidemic.html>
16. Dec 2016 *Straight Talk MD with Frank Sweeny* invited podcast to discuss "The Surgeon General's Report: Facing Addiction in America," <https://www.acast.com/straighttalkmd/facing-addiction-in-america-the-surgeon-generals-report>
17. Dec 2016, *NPR Fresh Air with Terry Gross* 'Drug Dealer, M.D.': Misunderstandings And Good Intentions Fueled Opioid Epidemic invited interview to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop* <http://www.npr.org/sections/health-shots/2016/12/15/505710073/drug-dealer-md-contentends-that-well-meaning-docs-drove-the-opioid-epidemic>
18. Dec 2016 *The Jimmy Moore Show* invited podcast to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*
19. Feb 2017 *WILK Radio, The Sue Henry Show* invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*
20. Feb 2017 *Reach, MD* with host John J. Russell, MD invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop* <https://www.reachmd.com/programs/book-club/drug-dealer-MD-how-doctors-duped-patients-hooked-why-so-hard-stop/8512/>
21. Mar 2017 *MSNBC with Chris Hayes*, live guest appearance to discuss the opioid epidemic in West Virginia <https://www.youtube.com/watch?v=0Ar30-kDSUQ&sns=em>
22. Mar 2017 *Stanford Law School Wellness Project Podcast*, with Dr. Joseph Bankman and Dr. Sarah Weinstein, to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop* [www.law.stanford.edu/wellnessproject](http://www.law.stanford.edu/wellnessproject)
23. Mar 2017 *SiriusXM's Tell Me Everything with John Fugelsang*, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*
24. Jun 2017 *The Texas Standard Radio Show*, invited guest to discuss the FDA decision to ask Endo Pharmaceuticals to withdraw Opana ER from the market <http://www.texasstandard.org/stories/fda-wants-painkiller-favored-by-opioid-abusers-off-the-market/>
25. Jun 2017 *NBC Television Sunday Night with Megyn Kelly*, invited expert to discuss

marijuana legalization <http://www.nbc.com/sunday-night-with-megyn-kelly/video/sunday-night-with-megyn-kelly/3536915>

26. Jun 2017 *KCBS Radio in San Francisco* invited guest to discuss the ongoing opioid epidemic
27. Jul 2017 KPCC's AirTalk with host Larry Mantle, live guest appearance to discuss the opioid crisis <http://www.scpr.org/programs/airtalk/2017/07/20/58084/in-the-context-of-the-opioid-crisis-doctors-discus/>
28. Jul 2017 Jose Calderon Mindful Psychiatry Live Radio and Podcast, invited guest to discuss *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop* <http://wholebodymentalhealth.libsyn.com/hard-pill-to-swallow-drug-dealer-md-with-dr-anna-lempke-md-7-5-17>
29. Aug 2017 KQED Forum with Michael Krasny Live Radio Broadcast, invited guest to discuss *Rise in High-Risk Drinking a Public Health Crisis, New Study Finds*
30. Aug 2017 MSNBC with Chris Hayes, live guest appearance to discuss President Trumps inaction on the opioid epidemic <http://www.msnbc.com/all-in/watch/donald-trump-has-done-nothing-on-the-opioid-crisis-1032009795986>
31. Sep 2017 KPCC's AirTalk with host Larry Mantle, live guest appearance to discuss CVS Pharmacy's announcement it will limit opioid prescriptions to seven days for certain conditions for new patients seeking drugs for pain relief.  
<http://www.scpr.org/programs/airtalk/2017/09/22/59288/how-much-would-cvs-s-7-day-limit-on-painkiller-pre/>
32. Oct 2017 BBC Newshour on BBC World Service radio on the opioid epidemic with host James Menendez <http://www.bbc.co.uk/programmes/w172vghc8jkr3g>
33. Oct 2017 NBCUniversal live in the studio with Dr. John Torres, One Nation Overdosed: Doctors Speak Out <http://qlnk.io/ql/59f0f15be4b0945e5d8ff73f>
34. Oct 2017 KPIX 5 CBS San Francisco Trump declares the opioid epidemic a public health emergency <http://sanfrancisco.cbslocal.com/video/3752604-critics-say-trumps-opioid-announcement-doesnt-go-far-enough/>
35. Oct 2017 KPIX 5 CBS San Francisco commentator on bay area parents using marijuana <http://sanfrancisco.cbslocal.com/2017/11/04/marin-mom-marijuana-makes-her-better-parent/>
36. Jan 2018 KQED with Brian Watt on "smartphone addiction"  
<https://soundcloud.com/kqed/investors-urge-apple-to-take-action-to-curb-digital-device-overuse-among-children>

37. Feb 2018 Sirius/XM radio with Clare Marie Gauthier, Co-Host, Dave Nemo Weekends, RadioNemo of North America, on the opioid epidemic and *Drug Dealer, MD: How Doctors Were Duped, Patients Got Hooked, and Why It's So Hard to Stop*
38. Feb 2018 KQED News radio, report on Purdue Pharma's decision to stop marketing opioids directly to doctors
39. Feb 2018 NPR Smartphone Detox, How to Power Down in a Wired World  
<https://www.npr.org/sections/health-shots/2018/02/12/584389201/smartphone-detox-how-to-power-down-in-a-wired-world>
40. Mar 2018 Sirius/XM Radio with Clare Marie Gauthier, Co-Host, Dave Nemo Weekends, RadioNemo of North America, on addiction treatment
41. Mar 2018 Sirius/XM Radio "Doctor Radio", on the silent benzodiazepine epidemic
42. Mar 2018 Sirius XM Radio: POTUS Channel 124, "Steele & Ungar", on new Center for Medicare and Medicaid Services regulations to restrict opioid prescribing
43. Mar 2018 KPCC's AirTalk with host Larry Mantle, live guest appearance to discuss new Center for Medicare and Medicaid Services regulations to restrict opioid prescribing
44. Mar 2018 Science VS. with Rose Rimler, "Opioids: Kicking America's Addiction"  
<https://www.gimletmedia.com/science-vs/opioids-kicking-americas-addiction#episode-player>
45. Apr 2018 KQED Forum with Michael Krasny, Medical Community Divided On Medicare's Policy to Shorten High-Dose Opioid Prescriptions,  
<https://www.kqed.org/forum/2010101864587/medical-community-divided-on-medicares-policy-to-shorten-high-dose-opioid-prescriptions>
46. May 2018 Radio Health Journal with Reed Pence: The Opioid Epidemic,  
[http://mediatracks.com/shows/RHJ\\_18-17.mp3](http://mediatracks.com/shows/RHJ_18-17.mp3)
47. May 2018 Straight Talk MD: Health | Medicine | Healthcare Policy | Health Education | Anesthesiology, The Cannabis Conversations: Part II with Anna Lembke MD <http://straighttalkmd.com/podcast/the-cannabis-conversations-part-ii-with-anna-lembke-md/>
48. Jun 2018 The Future of Everything with Russ Altman (Stanford Radio), 06/18/18. In a recent segment on Stanford Radio, Russ Altman discussed the rise of the opioid epidemic in the United States with Anna Lembke. <https://soundcloud.com/user-458541487/facing-addiction-with-guest-anna-lembke>
49. Jul 2018 NBC News with Dr. John Torres to discuss

benzodiazepines [https://www.nbcnews.com/nightly-news/video/is-anti-anxiety-medication-the-next-u-s-drug-crisis-1287215683720?cid=eml\\_onsite](https://www.nbcnews.com/nightly-news/video/is-anti-anxiety-medication-the-next-u-s-drug-crisis-1287215683720?cid=eml_onsite)

50. Oct 2018 NOVA/PBS documentary ADDICTION, Produced, Directed and Written by Sarah Holt, Co-producer Julie Crawford <http://www.holtproductions.org>; <http://www.pbs.org/wgbh/nova/body/addiction.html>
51. Mar 11, 2019 Spectrum News In Focus, What's Causing the Opioid Crisis, with Renee Eng, <https://spectruminfocus.com/section/in-focus/in-focus/2019/03/11/in-focus--what-s-causing-the-opioid-crisis#>
52. Apr 29, 2019 KALW City Visions, California's drug rehabilitation industry, <https://www.kalw.org/post/city-visions-reforming-californias-drug-rehabilitation-industry#stream/0>
53. May 20, 2019 Groundless Ground podcast with Lisa Dale Miller, Chronic Pain, Dual-Diagnosis and Addiction Treatment, <https://groundlessground.com/episodes/anna-lembke-chronic-pain-dual-diagnosis-and-addiction-treatment>
54. Jun 24, 2019 KCBS News Radio San Francisco 10 Q's w/Stan & Susan, to discuss rising rates of fentanyl overdose in San Francisco <https://kcbsradio.radio.com/blogs/margie-shafer/fentanyl-becomes-san-francis>
55. Jul 18, 2019 Russian Television News (RT International) "The Opioid Epidemic in the United States: Where Are We Now?" <https://www.youtube.com/watch?v=KP-Vn2d6LWk>
56. Aug 26, 2019 Russian Television News (RT International) on the Oklahoma vs Johnson & Johnson opioid litigation <https://youtu.be/sNKrMYIrPtE>
57. Aug 29, 2019 Monocle 24 Radio in London on the opioid crisis in follow up to the outcome of the Oklahoma vs Johnson & Johnson opioid litigation
58. Sep 2019 American Journal of Psychiatry Residents' Journal podcast series <http://ajpresidentsjournal.apapublishing.libsynpro.com>
59. Sep 2019 *The Voice of Medicine* podcast, [m.hulik@radiolutions.com](mailto:m.hulik@radiolutions.com)
60. Oct 2019 *This is Life with Lisa Ling*, Benzodiazepines, <https://www.cnn.com/2019/10/04/health/benzodiazepines-this-is-life-with-lisa-ling/index.html> ; <https://itunes.apple.com/us/tv-season/this-is-life-with-lisa-ling-season-6/id1480545936>
61. Oct 2019 *Straight Talk with Frank Sweeny*, Benzodiazepines, <https://podcasts.apple.com/us/podcast/straight-talk-md-health-medicine-healthcare->

policy/id1060256849#episodeGuid=78d97afe7ea14dac8261193a2aa3d69 ;  
<https://open.spotify.com/episode/1jrtfq60dmraRnzTtsUNeb?si=jO2RZqjDTM-c1VJUVsWcuw>

62. Dec 2019 CBSN Bay Area, 12/09/19 *Medical Monday: How to avoid overindulging in alcohol during the holiday season and setting healthy drinking limits*  
<https://sanfrancisco.cbslocal.com/live/cbsn-bay-area/video/3439448-20191209162159-medical-mondays-dr-anna-lembke-addiction-recovery-relapse-triggers/>
63. Feb 2020 Netflix's "The Pharmacist" explores how pill mill doctors fanned the flames of the country's opioid epidemic by flagrantly overprescribing three particular drugs. Anna Lembke, associate professor of psychiatry and behavioral sciences, is quoted in this piece. <https://www.oxygen.com/true-crime-buzz/oxycontin-soma-xanax-the-holy-trinity-from-the-pharmacist-explained>
64. Feb 2020 Anna Lembke appeared on the Netflix documentary series *The Pharmacist*.  
<https://www.netflix.com/title/81002576>
65. Feb 2020 *What Makes Up Your Mind: Opioids and Addiction with Dr. Anna Lembke*, Stanford University Department of Psychiatry Podcast,  
<https://m.soundcloud.com/stanfordpsy/february2020/s-kBmxv>
66. Feb 2020 Sirius XM Doctor Radio, invited guest to discuss benzodiazepines,  
[Scott.Uhing@SiriusXM.com](mailto:Scott.Uhing@SiriusXM.com)
67. Apr 2020 *Mental Health During Quarantine*, Doc to Doc with Dr. John Torres, Medical Correspondent NBC News and MSNBC, Facebook Live,  
<https://www.facebook.com/NBCNews/videos/doc-to-doc-coronavirus-conversation-with-dr-anna-lembke/280171329668121/>
68. Jul 2020 *The Therapy Show* with Dr. Bridget Nash,  
<https://www.therapyshow.com/podcasts/episode/2986f561/drug-dealer-md-author-dr-anna-lembke-discusses-the-latest-treatments>
69. Aug 2020 *How is the Pandemic Affecting People Struggling with Addiction*, Stanford Medicine Scope Interview with Paul Costello  
<https://scopeblog.stanford.edu/2020/08/11/how-the-pandemic-is-affecting-people-struggling-with-addiction/>
70. Aug 2020 *How the Pandemic is Affecting People Struggling with Addiction*, Stanford Medicine's Paul Costello speaks with Anna Lembke, MD, Associate Professor of psychiatry and behavioral sciences, for a 1:2:1 podcast about the impact of the pandemic on people with drug and alcohol addiction.  
<https://scopeblog.stanford.edu/2020/08/11/how-the-pandemic-is-affecting-people-struggling-with-addiction/>

71. Sep 2020 *COVID-19 and Mental Health with Anna Lembke MD* from Straight Talk MD with Frank Sweeny on Apple Podcasts  
<https://podcasts.apple.com/us/podcast/straight-talk-md/id1060256849?i=1000489628559>
72. Sep 2020 Anna Lembke appeared on the Netflix documentary *The Social Dilemma*, explaining that "social media is a drug" which exploits the brain's evolutionary need for interpersonal connection. <https://www.thesocialdilemma.com/reclaim-your-screen-time/>
73. Sep 2020 *Officers, tow truck driver released from hospital after Fentanyl exposure scare on Golden Gate Bridge*. Dr. Anna Lembke was interviewed regarding fentanyl exposure.  
<https://abc7news.com/chp-golden-gate-officers-fentanyl-exposure-bridge-crash-sf-car-crahs/6421359/>
74. Oct 2020 *Anna Lembke – Episode 55, Rallen’s Rant* <https://soundcloud.com/richie-allen-3/anna-lembke-episode-55>
75. Nov 2020 *Our Social Dilemma: My Conversation with Dr. Anna Lembke* from 20 Minutes with Bronwyn <https://podcasts.podinstall.com/twentyminuteswithbronwyn-20-minutes-bronwyn/202011031100-our-social-dilemma-my-conversation-dr-anna-lembke.html>
76. Nov 2020 *The Social Dilemma of a Nation Addicted to Dopamine (ft. Dr. Anna Lembke)* from Designed to Heal. <https://podcasts.apple.com/us/podcast/designed-to-heal/id1479146995>
77. Dec 2020 *Dr Anna Lembke - Addiction and Social Media*, Woven Experiences by Marissa Monnig <https://anchor.fm/marissa-monnig/episodes/Dr-Anna-Lembke---Addiction-and-Social-Media-en7kma>
78. Jan 2021 *The Social Dilemma: Preconceived with Zale Mednick* (Apple Podcasts) <https://link.chtbl.com/FYGb94jM>
79. Jan 2021 *PharmedOut at Georgetown University Panel Discussion w/ Dr. Anna Lembke* <https://www.youtube.com/watch?v=iCaF2JSVhdg&t=6s>
80. Feb 2021 The “Addict” in All of Us: The Surprising Places Where Addiction Exists, Dr. Anna Lembke, MD, The Bottom Line Advocate With Sarah Hiner <https://bottomlineinc.com/health/addiction/the-addict-in-all-of-us-the-surprising-places-where-addiction-exists-sarah-hiner-talks-to-addiction-specialist-anna-lembke-md>
81. Feb 2021 Anna Lembke appeared on the HBO Panel regarding the documentary *The*



*Crime of the Century* on the opioid crisis

82. Mar 2021 National Society of High School Scholars Panel with Jeff Orlowski and Tim Kendall on *The Social Dilemma* <https://www.nshss.org/events/past-webinars/>
83. Mar 2021 *Insight on the Opioid Crisis: An Interview with Dr. Anna Lembke*, The Power of the Patient Project <https://www.youtube.com/watch?v=TtMv6yNI4Uo&t=60s>
84. Mar 2021 *Dopamine Nation: Finding Balance in the Age of Indulgence*, The Parent Venture (Parent Education), Menlo Park, CA [https://www.youtube.com/watch?v=rHI4N\\_lShJI&t=14s](https://www.youtube.com/watch?v=rHI4N_lShJI&t=14s)
85. Apr 2021 Anna Lembke appeared on the HBO documentary *The Crime of the Century* on the opioid crisis <https://www.youtube.com/watch?v=nK1avWWjiZ4&t=76s>
86. Apr 2021 *Dopamine Nation: Social Media, Persuasion, and the Science of Addiction*, Anna Lembke in conversation with Aza Raskin, Aspen Brain Institute Expert Series <https://www.youtube.com/watch?v=T4yMzP5oCDA>
87. May 2021 *Recovery: The Hero's Journey (The Epidemic of Overprescribing Opioids and Benzodiazepines)* Interviewed by Dr. Patricia Harrigan on Mental Health for The Voice of America <https://www.voiceamerica.com/episode/131102/the-epidemic-of-overprescribing-opioids-and-benzodiazepines>
88. Jul 2021, Best Practices for Opioid Tapering, Compass Opioid Steward Program, <https://directory.libsyn.com/episode/index/id/19758497>
89. Aug 2021 Interview with Dr. David Perlmutter, MD Empowering Neurologist Podcast, about my book *Dopamine Nation*
90. Aug 2021 Interview with Terri Gross, NPR's *Fresh Air*, about my book *Dopamine Nation*
91. Aug 2021 Interview with Tucker Carlson, *The Tucker Carlson Show* FOX News, about my book *Dopamine Nation*
92. Aug 2021 Interview with Rich Roll, *The Rich Roll Podcast*, about my book *Dopamine Nation* <https://www.richroll.com/podcast/anna-lembke-623/>
93. Aug 2021 *KALW Radio*, Interview on The State of the Bay, about my book *Dopamine Nation* <https://www.kalw.org/show/state-of-the-bay/2021-08-29/the-neuroscience-of-addiction-san-franciscos-corruption-sfjazz-high-school-all-stars>
94. Aug 2021 *Laurie Interviews Dr. Anna Lembke about Addictions & How We All Have*



Them, The Laurie DeYoung Show, <https://wpoc.iheart.com/featured/the-laurie-deyoung-show/content/2021-08-26-laurie-interviews-dr-anna-lembke-about-addictions-how-we-all-have-them/>

95. Aug 2021 *Is Instagram a Drug?: Dr. Anna Lembke*, SuperAge: Live Better podcast <https://podcasts.apple.com/tn/podcast/is-instagram-a-drug-dr-anna-lembke/id1514482663?i=1000533053656>
96. Aug 2021 *Dr. Anna Lembke Understanding & Treating Addiction, Episode 33*, Huberman Lab podcast, <https://hubermanlab.libsyn.com/dr-anna-lembke-understanding-treating-addiction-episode-33>
97. Aug 2021 *On the Podcast: Leigh Montville, Robert Meyer and Dan Koeppe, and Anna Lembke*, This is the Author <https://www.penguinrandomhouseaudio.com/blog/on-the-podcast-leigh-montville-robert-meyer-and-dan-koeppe-and-anna-lembke/>
98. Aug 2021 *Tech, Social Media & Addiction – Anna Lembke*, Engineer-Mind podcast <https://www.youtube.com/watch?v=qIEFb0spXRY>
99. Aug 2021 *Anna Lembke: Dopamine & Digital Addiction*, Singularity Radio <https://anchor.fm/singularity-radio/episodes/FBL24---Anna-Lembke-Dopamine--Digital-Addiction-e16eso2>
100. Aug 2021 *Overcoming Social Media Addiction*, Mind Espresso with Scott Engler <https://podcasts.apple.com/us/podcast/overcoming-social-media-addiction/id1460146095?i=1000533877661>
101. Aug 2021 *Dr. Anna Lembke: Finding Balance in a Dopamine-Overloaded World*, The Courageously. U Podcast <https://courageouslyu.com/anna-lembke/>
102. Aug 2021 *Dopamine Nation with Anna Lembke MD*, Straight Talk MD with Frank Sweeny <https://straighttalkmd.com/podcast/dopamine-nation-with-anna-lembke-md/>
103. Aug 2021 *Anna Lembke MD: social media is a drug*, Northstar Unplugged, <https://www.northstarsleepschool.com/anna-lembke-md>
104. Aug 2021 *Finding Balance in the Age of Indulgence: With Guest Dr. Anna Lembke*, The Rick Ungar Show <https://www.rickungarshow.com/finding-balance-in-the-age-of-indulgence-with-guest-dr-anna-lembke/>
105. Sep 2021 Interview with Joe Rogan, *The Joe Rogan Experience*, about my book *Dopamine Nation*
106. Sep 2021 *The Correlation Between the Opioid Epidemic and Social Media with Dr. Anna Lembke*, Adjusted Reality podcast,

<https://www.buzzsprout.com/1220486/9097921>

107. Sep 2021 *Dr. Anna Lembke | Dopamine, Addiction, Pleasure and Pain, Brokenness & The Importance of Truth*, Freedom Pact  
<https://www.youtube.com/watch?v=dbxalFNVsD0>
108. Sep 2021 *How We Became A Dopamine Nation with Anna Lembke, M.D., Chef AJ Live* <https://www.youtube.com/watch?v=VLImiOxEQKU>
109. Sep 2021 *Are You Addicted To Your Phone?*, Viewpoints Radio  
<https://www.youtube.com/watch?v=GIpvECU6l1us>
110. Sep 2021 *Dr. Anna Lembke, Medical Director of Addiction Medicine at Stanford University on "Dopamine Nation," Neuroscience Meets Social and Emotional Learning Podcast* <https://www.youtube.com/watch?v=5Pu82wZRZwo>
111. Sep 2021 *How our smartphones are turning us into dopamine junkies*, Radio New Zealand <https://www.rnz.co.nz/national/programmes/sunday/audio/2018812004/how-our-smartphones-are-turning-us-into-dopamine-junkies>
112. Sep 2021 *Dr. Anna Lembke – Dopamine Nation; Why We’re Addicted*, ManTalks  
<https://www.youtube.com/watch?v=9IPrXhE-FUE>
113. Sep 2021 *Ep. 32: Dopamine Nation by Dr. Anna Lembke*, Billboard Happiness  
<https://podcasts.apple.com/no/podcast/ep-32-dopamine-nation-by-dr-anna-lembke/id1448644391?i=1000534719995>
114. Sep 2021 *Regulating the dopamine hit from gaming*, Hack  
<https://www.abc.net.au/triplej/programs/hack/hack/13518258>
115. Sep 2021 *KRTS Radio, Dr. Anna Lembke: Regulating dopamine production*,  
<https://soundcloud.com/550ktrs/dr-anna-lembke-regulating-dopamine-production>
116. Sep 2021 *Dr. Anna Lembke on The Zeitgeist*, A Mighty Blaze  
<https://www.youtube.com/watch?v=L4VBpCQ2XtI>
117. Sep 2021 KPIX 5 CBS UPDATE: DEA Issues Safety Alert As San Francisco Fentanyl Seizures Soar <https://sanfrancisco.cbslocal.com/2021/09/28/dea-drug-enforcement-administration-san-francisco-fentanyl-seizures/>
118. Sep 2021 *Experts Say TV Binge-Watching Feels Like A Drug, Reset with Sasha-Ann Simmons* <https://www.wbez.org/stories/experts-say-tv-binge-watching-feels-like-a-drug/24fefcf7-925b-4e92-8b51-5b4c5c0abb0>
119. Oct 2021 *Anna Lembke - Dopamine Nation, The Hidden Why*  
<https://soundcloud.com/leigh-martinuzzi/1007-anna-lembke-dopamine-nation>

120. Oct 2021 *Dopamine Addiction featuring Dr. Anna Lembke*, Rehab Road Trips  
[https://www.youtube.com/watch?v=j0Qzbfl4q\\_k](https://www.youtube.com/watch?v=j0Qzbfl4q_k)
121. Oct 2021 BNC News The Dark Side of Social Media  
<https://www.facebook.com/BNCNews/videos/270205431643009/>
122. Oct 2021 *Anna Lembke*, Food Junkies Podcast  
<https://podcasts.apple.com/ca/podcast/food-junkies-podcast/id1547705773>
123. Oct 2021 *Podcast #745: Do You Need to Take a Dopamine Fast?*, Art of Manliness Podcast <https://www.artofmanliness.com/health-fitness/health/do-you-need-to-take-a-dopamine-fast/>
124. Oct 2021 1-hour interview with Tucker Carlson, featured on Fox Nation *Tucker Carlson Today*
125. Oct 2021 *The World Tonight* with Kelly Wright and Nayyera Haq
126. Week of Oct 11, 2021
- a. CNN New Day Atlanta, Georgia
  - b. Russel Brand Under the Skin
  - c. [Metro.co.uk](https://metro.co.uk)'s mental health podcast, Mentally Yours
  - d. Danny Zederman Armchair Nutritionist, WMVP-AM in Chicago ESPN
  - e. Nervous Habits Podcast
  - f. Cool Science Radio
  - g. Impact Theory Podcast
127. Week of Oct 18, 2021
- a. Sirius XM Doctor Radio
  - b. Melissa Monte Mindlove podcast
  - c. The Rational Reminder podcast
  - d. Modern Wisdom podcast
  - e. Positive Sobriety podcast
  - f. Wise Traditions podcast
  - g. How Humans Work podcast
128. Week of Oct 25, 2021
- a. The Ben Shapiro Show
  - b. Status Check with Mike Spivey
  - c. Rehab Confidential
  - d. Michael Gervais Finding Mastery podcast
  - e. I Am Driven podcast
  - f. Mark Bell's Power Project
  - g. The Bill Martinez Show
  - h. Superhumanize Podcast with Ariane Sommer

- i. Interview with Tom Swarbrick on UK radio station  
LBC <https://www.lbc.co.uk/>
  - j. Impact Factor Podcast
  - k. Brainwash Festival in Amsterdam
  - l. Brave New World Podcast
129. Week of Nov 1, 2021
- a. Unsiloed podcast
  - b. Austin McClinton podcast
  - c. Mindful in May Podcast
  - d. Freedom Matters Podcast
  - e. Highway to Health on Sirium XM radio
  - f. Yvette Le Blowitz for the Spait Girl Podcast (Australia)
  - g. ABC Radio National's All in the Mind program (Australia)
  - h. John Byren Dig Life Deep Podcast
  - i. Phoenix arts, science, and cultural salon with Thomas Toulon
130. Week of Nov 8, 2021
- a. Welcome Home Podcast
  - b. AT Banter Podcast
  - c. Dr. Trish Leigh Podcast
  - d. Trey Elling Books on Pod
  - e. Sober Curious Podcast
  - f. Endogenius Ahmed Nayel Podcast
131. Week of Nov 15, 2021
- a. Lauri Marbas Podcast
  - b. San Francisco KCBS In Depth Interview
  - c. Clint Malley Podcast
  - d. CNN Christine Koh interview
132. Week of Nov 22, 2021
- a. Dr. Chatterjee Podcast (UK)
  - b. University of Edinburgh Gregor Thomson podcast
  - c. Allison Heiliczzer Webinar in Hong Kong
  - d. Sober Powered Podcast with Gillian Tietz
133. Week of Nov 29<sup>th</sup>, 2021
- a. Blumatterproject Podcast
  - b. Wise Traditions Podcast
  - c. Next Big Idea Podcast with Rufus Griscom
  - d. Soberful Podcast
  - e. Parks and Recreation, Spokane, WA
  - f. Tom Foxley Podcast
  - g. The Parent Venture Webinar with Charlene Margot
  - h. Derek Burnett from Bottom Line

- i. Mark Pearson and Tracy Wood Podcast
  - j. Empowered Relationship Podcast with Dr. Jessica Higgins
  - k. Resilient Recovery Podcast
134. Week of Dec 6<sup>th</sup>, 2021
- a. Body and Soul Healthy Podcast (Australia)
  - b. Brian Mann NPR
  - c. Jay Martin Cambridgehouse Podcast
  - d. Talking to Teens Podcast
  - e. Tully Podcast
135. Week of Dec 13<sup>th</sup>, 2021
- a. Best of Belfast Podcast (UK)
  - b. Ukrainian popular science media Kunsht (<https://kunsht.com.ua/>)
  - c. The Breakfast Show Voice of Islam Radio Station
  - d. Dan Pierce Book Club
  - e. Psychologists off the Clock with Diana Hill
136. Week of Dec 20<sup>th</sup>, 2021
- a. Science Studio
  - b. Shin Suzuki, Reporter, BBC News Brasil;  
<https://g1.globo.com/saude/sexualidade/noticia/2021/12/28/como-pornografia-afeta-o-cerebro-e-habitos-sexuais-de-jovens-como-a-cantora-billie-eilish.ghtml>
137. Week of Dec 27<sup>th</sup>, 2021
- a. Win Today with Christopher Cook Podcast
  - b. KCBS All News Radio with Mary Hughes
138. Week of Jan 3<sup>rd</sup>, 2022
- a. Roy Ben The Genuinely Interested Podcast
  - b. IMS Interview with Nervo (UK)
  - c. GovCon Different Podcast
139. Week of Jan 10<sup>th</sup>, 2022
- a. Healthier Together Podcast
  - b. The Melanie Avalon Biohacking Podcast
  - c. Louie B. Brainfood from the Heartland radio
140. Week of Jan 17<sup>th</sup>, 2022
- a. The Garden in London (UK)
  - b. Edukitchen Podcast (Rotterdam)
  - c. Drew and Liv Podcast
  - d. Preconceived Podcast with Zale Mednick
  - e. Kelly Brown Heart Media
  - f. Nimah Gobir Mindshift Podcat for NPR

- g. Lindsay Crouse Opinion Editor NYTs
141. Week of Jan 24<sup>th</sup>, 2022
    - a. Interview with Giuliano Il Venerdi (La Repubblica) - launch in Italy
    - b. Gary Collins Podcast
    - c. Metaphysical Milkshake Podcast with Rainn Wilson and Reza Aslan (Kast Media)
  142. Week of Jan 31<sup>st</sup>, 2022
    - a. Peter Bregman Podcast
    - b. Storybox Australia Podcast
    - c. Think Unbroken Podcast
    - d. Bradford Pope McArthur Is American Declining interview for docuseries
    - e. Infotrack Radio Tour
  143. Week of Feb 7<sup>th</sup>, 2022
    - a. Jitender Kumar, Central European Institute of Technology, BRNO, Czech Republic
    - b. Keep Talking Podcast
    - c. A Writer Helping Writers Thrive Podcast
  144. Week of Feb 14<sup>th</sup>, 2022
    - a. Interview with Daniela Gassmann, editor of *Süddeutsche Zeitung Magazin*, the weekly supplement of *Süddeutsche Zeitung*, Germany's biggest daily newspaper.
    - b. Pathways Radio with Paul O'Brien
  145. Week of Feb 21<sup>st</sup>, 2022
    - a. Interview with Andreas Bättig from Switzerland's *Tagesanzeiger*, *Bernerzeitung*
    - b. Simple Families Podcast
    - c. Muscle for Life Podcast
    - d. ACE Women's Network Keynote Speaker in Georgia
    - e. Tech Addiction Investor Roundtable (London)
    - f. The Weekend University (London)
  146. Week of Feb 28<sup>th</sup>, 2022
    - a. Watching American, NPR Affiliate in North Carolina
    - b. THINK, KERA FM Live Radio
    - c. Open Minds Institute UCLA
    - d. Rita McGrath - Friday Fireside Chat
  147. Week of Mar 7<sup>th</sup>, 2022
    - a. Not Perfect Podcast - 60 mins with Poppy (Georgie Rutherford) in the UK
    - b. Anthony Sarandrea Podcast
    - c. The Super Human Life Podcast

- d. NPR LifeKit
- 148. Week of Mar 14<sup>th</sup>, 2022
  - a. Joe de Sena Spartan Podcast
  - b. Mario Nanos Family Forum
  - c. FUT Ballerz Podcast
  - d. Jeff Christian Podcast
- 149. Week of Mar 21<sup>st</sup>, 2022
  - a. Clearhead Webinar New Zealand
  - b. Armchair Expert Podcast with Dax Shepard
- 150. Week of Mar 28<sup>th</sup>, 2022
  - a. Comes a Time Podcast
  - b. Hopestream Podcast
  - c. Habits and Hustle with Jennifer Cohen Podcast
- 151. Week of Apr 4<sup>th</sup>, 2022
  - a. Mahon McCann Podcast
  - b. John and Nick Flourishing Philosophy Podcast
  - c. The Crossover Podcast with Dr. Rick Komotar
  - d. John Slye Podcast from Grace Church, Atlanta, Georgia
  - e. Wisdom 2.0, San Jose, CA
- 152. Week of Apr 11<sup>th</sup>, 2022
  - a. B.Rad Podcast
  - b. Aaron Kaplan podcast
  - c. Gill Tietz Podcast
- 153. Week of Apr 18<sup>th</sup>, 2022
  - a. Thrive Global Podcast
  - b. SMART Recovery Podcast
- 154. November 2022 Appeared in the Netflix documentary, *Take Your Pills: Xanax*.
- 155. Nov 2022 CNN with Michael Smerconish, discussing *Dopamine Nation: Finding Balance in the Age of Indulgence* and smartphone addiction
- 156. Jun 2023 NPR's Hidden Brain with Shankar Vedantam discussing *Dopamine Nation: Finding Balance in the Age of Indulgence*
- 157. Jun 2023 *Spark* on the Canadian Broadcasting Corporation, discussing *Dopamine Nation: Finding Balance in the Age of Indulgence* and smartphone addiction
- 158. Jun 2023 South Korea's *Money Time*, discussing *Dopamine Nation: Finding Balance in the Age of Indulgence*



# Anna Lembke, M.D. Report

## EXHIBIT B

### Materials Considered

### **Materials Considered**

1. Abrahamsson, S. (2024). Smartphone bans, student outcomes and mental health. In SAM (Discussion Paper No. 0804–6824; Vols. 01–24). <https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/3119200/DP%2001.pdf?sequence=1&isAllowed=y>
2. Aichner, T., Grünfelder, M., Maurer, O., & Jegeni, D. (2021). Twenty-Five Years of Social Media: A Review of Social Media Applications and Definitions from 1994 to 2019. *Cyberpsychology, behavior and social networking*, 24(4), 215–222. <https://doi.org/10.1089/cyber.2020.0134>
3. Alcoholics Anonymous (n.d.) What is A.A.? <https://www.aa.org/what-is-aa>
4. Allcott, H., Braghieri, L., Eichmeyer, S., & Gentzkow, M. (2020). The welfare effects of social media. *The American Economic Review*, 110(3), 629–676. <https://doi.org/10.1257/aer.20190658>
5. Allem J. P. (2024). Social Media and Adolescent Health. *American journal of public health*, 114(10), 980–982. <https://doi.org/10.2105/AJPH.2024.307784>
6. Alutaybi, A., Al-Thani, D., McAlaney, J., & Ali, R. (2020). Combating Fear of Missing Out (FoMO) on Social Media: The FoMO-R Method. *International journal of environmental research and public health*, 17(17), 6128. <https://doi.org/10.3390/ijerph17176128>
7. Alvarez, J. A., & Emory, E. (2006). Executive function and the frontal lobes: a meta-analytic review. *Neuropsychology review*, 16(1), 17–42. <https://doi.org/10.1007/s11065-006-9002-x>
8. American Association of Addiction Medicine. (2011. August 15). Public Policy Statement: Short Definition of Addiction. [https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policy-statements/1definition\\_of\\_addiction\\_short\\_4-11.pdf?sfvrsn=6e36cc2\\_0](https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policy-statements/1definition_of_addiction_short_4-11.pdf?sfvrsn=6e36cc2_0)
9. American Psychiatric Association (2024) What is Technology Addiction?. <https://www.psychiatry.org/patients-families/technology-addictions-social-media-and-more/what-is-technology-addiction>
10. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
11. American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>
12. American Psychological Association. (2023). Health advisory on social media use in adolescence. <https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use.pdf>
13. American Psychological Association. (2024). Potential risks of content, features, and functions: The science of how social media affects youth. <https://www.apa.org/topics/social-media-internet/psychological-science-behind-youth-social-media.pdf>
14. American Society of Addiction Medicine (ASAM) Definition of Addiction. [https://www.asam.org/docs/default-source/quality-science/asam's-2019-definition-of-addiction-\(1\).pdf?sfvrsn=b8b64fc2\\_2](https://www.asam.org/docs/default-source/quality-science/asam's-2019-definition-of-addiction-(1).pdf?sfvrsn=b8b64fc2_2), (adopted September 15,2019)
15. American Society of Addiction Medicine. (2011. August 15). Public Policy Statement: Short Definition of Addiction.

- [https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policy-statements/1definition\\_of\\_addiction\\_short\\_4-11.pdf?sfvrsn=6e36cc2\\_0](https://web.archive.org/web/20181007192411/https://www.asam.org/docs/default-source/public-policy-statements/1definition_of_addiction_short_4-11.pdf?sfvrsn=6e36cc2_0)
16. Amnesty International. (2023, February 13). “We are totally exposed”: Young people share concerns about social media’s impact on privacy and mental health in global survey. <https://www.amnesty.org/en/latest/news/2023/02/children-young-people-social-media-survey-2/>
  17. Anderson, J. & Rainie, L. (2018). The future of well-being in a tech-saturated world. Pew Research Center.
  18. Anderson, M., Faverio, M., & Gottfried, J. (2023). Teens, Social Media and Technology 2023. Pew Research Center. [https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2023/12/PI\\_2023.12.11-Teens-Social-Media-Tech\\_FINAL.pdf](https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2023/12/PI_2023.12.11-Teens-Social-Media-Tech_FINAL.pdf)
  19. Andreassen, C. S., & Pallesen, S. (2014). Social network site addiction - an overview. *Current pharmaceutical design*, 20(25), 4053–4061. <https://doi.org/10.2174/13816128113199990616>
  20. Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook Addiction Scale. *Psychological reports*, 110(2), 501–517. <https://doi.org/10.2466/02.09.18.PR0.110.2.501-517>
  21. Barinka, A. (2022, October 26) Meta’s Instagram Users Reach 2 Billion, Closing In on Facebook, Bloomberg. <https://www.bloomberg.com/news/articles/2022-10-26/meta-s-instagram-users-reach-2-billion-closing-in-on-facebook>
  22. Barry, E. (2024, June 17). Surgeon General Calls for Warning Labels on Social Media Platforms. *The New York Times*. <https://www.nytimes.com/2024/06/17/health/surgeon-general-social-media-warning-label.html>
  23. Barry, Ellen. (2025, June 18). Real Risk to Youth Mental Health Is ‘Addictive Use,’ Not Screen Time Alone, Study Finds. *The New York Times*. <https://www.nytimes.com/2025/06/18/health/youth-suicide-risk-phones.html/>
  24. Batten, S. R., Bang, D., Kopell, B. H., Davis, A. N., Heflin, M., Fu, Q., Perl, O., Ziafat, K., Hashemi, A., Saez, I., Barbosa, L. S., Twomey, T., Lohrenz, T., White, J. P., Dayan, P., Charney, A. W., Figue, M., Mayberg, H. S., Kishida, K. T., Gu, X., ... Montague, P. R. (2024). Dopamine and serotonin in human substantia nigra track social context and value signals during economic exchange. *Nature human behaviour*, 8(4), 718–728. <https://doi.org/10.1038/s41562-024-01831-w>
  25. Bjork, J. M., Knutson, B., Fong, G. W., Caggiano, D. M., Bennett, S. M., & Hommer, D. W. (2004). Incentive-elicited brain activation in adolescents: similarities and differences from young adults. *The Journal of neuroscience : the official journal of the Society for Neuroscience*, 24(8), 1793–1802. <https://doi.org/10.1523/JNEUROSCI.4862-03.2004>
  26. Błachnio, A., Przepiorka, A., Benvenuti, M., Cannata, D., Ciobanu, A. M., Senol-Durak, E., Durak, M., Giannakos, M. N., Mazzoni, E., Pappas, I. O., Popa, C., Seidman, G., Yu, S., Wu, A. M. S., & Ben-Ezra, M. (2016). Cultural and Personality Predictors of Facebook Intrusion: A Cross-Cultural Study. *Frontiers in Psychology*, 7. <https://doi.org/10.3389/fpsyg.2016.01895>

27. Blum, A. W., & Grant, J. E. (2022). Legal aspects of problematic internet usage. *Current Opinion in Behavioral Sciences*, 45, Article 101142. <https://doi.org/10.1016/j.cobeha.2022.101142>
28. Boer, M., van den Eijnden, R. J. J. M., Finkenauer, C., Boniel-Nissim, M., Marino, C., Inchley, J., Cosma, A., Paakkari, L., & Stevens, G. W. J. M. (2022). Cross-national validation of the social media disorder scale: findings from adolescents from 44 countries. *Addiction (Abingdon, England)*, 117(3), 784–795. <https://doi.org/10.1111/add.15709>
29. Boniel-Nissim M, Marino C, Galeotti T, Blinka L, Ozoliņa K, Craig W et al. A focus on adolescent social media use and gaming in Europe, central Asia and Canada. *Health Behaviour in School-aged Children international report from the 2021/2022 survey*. Volume 6. Copenhagen: WHO Regional Office for Europe; 2024: CC BY-NC-SA 3.0 IGO
30. Bottaro, R., Griffiths, M. D., & Faraci, P. (2025). Meta-analysis of reliability and validity of the bergen social media addiction scale (bsmas). *International Journal of Mental Health and Addiction*. Advance online publication. <https://doi.org/10.1007/s11469-025-01461-x>
31. Braghieri, L., Levy, R., & Makarin, A. (2022). Social Media and Mental Health. *The American Economic Review*, 112(11), 3660–3693. <https://doi.org/10.1257/aer.20211218>
32. Brailovskaia, J., Delveaux, J., John, J., Wicker, V., Noveski, A., Kim, S., Schillack, H., & Margraf, J. (2023). Finding the "sweet spot" of smartphone use: Reduction or abstinence to increase well-being and healthy lifestyle?! An experimental intervention study. *Journal of experimental psychology. Applied*, 29(1), 149–161. <https://doi.org/10.1037/xap0000430>
33. Breems, N., & Basden, A. (2014). Understanding of Computers and Procrastination: A Philosophical Approach. *Computers in Human Behavior*, 31, 211. <https://doi.org/10.1016/j.chb.2013.10.024>
34. Brown, S. A., & Schuckit, M. A. (1988). Changes in depression among abstinent alcoholics. *Journal of studies on alcohol*, 49(5), 412–417. <https://doi.org/10.15288/jsa.1988.49.412>
35. Brunner, E., Polley, S. (2024) Youth and Social Media: Connections to Addiction and Mental Illness. [PowerPoint Slides]. ASAM. <https://c36a7b585371cb8e876b-385db121fa2b55910fed97d2d3aaf4f8.ssl.cf1.rackcdn.com/2622565-1187280-001.pdf>
36. Burnell, K., Garrett, S. L., Nelson, B. W., Prinstein, M. J., & Telzer, E. H. (2024). Daily links between objective smartphone use and sleep among adolescents. *Journal of adolescence*, 96(6), 1171–1181. <https://doi.org/10.1002/jad.12326>
37. Burnell, K., Treks, J., Prinstein, M. J., & Telzer, E. H. (2024). Adolescents' social comparison on social media: Links with momentary self-evaluations. *Affective Science*. Advance online publication. <https://doi.org/10.1007/s42761-024-00240-6>
38. Burszty, L., Handel, B., Jimenez, R., & Roth, C. (2023). When product markets become collective traps: the case of social media. <https://doi.org/10.3386/w31771>
39. Campbell-Meiklejohn, D. K., Bach, D. R., Roepstorff, A., Dolan, R. J., & Frith, C. D. (2010). How the opinion of others affects our valuation of objects. *Current biology : CB*, 20(13), 1165–1170. <https://doi.org/10.1016/j.cub.2010.04.055>
40. Caplan, S. E. (2010). Theory and measurement of generalized problematic Internet use: A two-step approach. *Computers in Human Behavior*, 26, 1089–1097.

41. Capraro, V., Globig, L., Rausch, Z., Rathje, S., Wormley, A., Olson, J., ... & Van Bavel, J. J. (2025). A consensus statement on potential negative impacts of smartphone and social media use on adolescent mental health. [https://osf.io/preprints/psyarxiv/b94dy\\_v1](https://osf.io/preprints/psyarxiv/b94dy_v1)
42. Carbonell, X., & Panova, T. (2017). A critical consideration of social networking sites' addiction potential. *Addiction Research & Theory*, 25(1), 48–57. <https://doi.org/10.1080/16066359.2016.1197915>
43. Carpenter, K. A., Nguyen, A. T., Smith, D. A., Samori, I. A., Humphreys, K., Lembke, A., Kiang, M. V., Eichstaedt, J. C., & Altman, R. B. (2025). Which social media platforms facilitate monitoring the opioid crisis?. *PLOS digital health*, 4(4), e0000842. <https://doi.org/10.1371/journal.pdig.0000842>
44. Cash, H., Rae, C. D., Steel, A. H., & Winkler, A. (2012). Internet Addiction: A Brief Summary of Research and Practice. *Current psychiatry reviews*, 8(4), 292–298. <https://doi.org/10.2174/157340012803520513>
45. Cataldo, I., Billieux, J., Esposito, G., & Corazza, O. (2022). Assessing problematic use of social media: Where do we stand and what can be improved? *Current Opinion in Behavioral Sciences*, 45, Article 101145. <https://doi.org/10.1016/j.cobeha.2022.101145>
46. Chandonnet, H. (2024, September 20). Why social media companies keep copying each other. *Fast Company*. <https://www.fastcompany.com/91194667/why-social-media-companies-keep-copying-each-other>
47. Cheng, C., Lau, Y. C., Chan, L., & Luk, J. W. (2021). Prevalence of social media addiction across 32 nations: Meta-analysis with subgroup analysis of classification schemes and cultural values. *Addictive behaviors*, 117, 106845. <https://doi.org/10.1016/j.addbeh.2021.106845>
48. [REDACTED], & [REDACTED] (2019). Understanding Perceptions of Problematic Facebook Use. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3290605.3300429>
49. Chester, J.; Montgomery, K.C.; Kopp, K. *Big Food, Big Tech, and the Global Childhood Obesity Pandemic*; Center for Digital Democracy: Washington, DC, USA, 2021;
50. Chevallier, C., Kohls, G., Troiani, V., Brodtkin, E. S., & Schultz, R. T. (2012). The social motivation theory of autism. *Trends in cognitive sciences*, 16(4), 231–239. <https://doi.org/10.1016/j.tics.2012.02.007>
51. Chiang, H., & Hsiao, K. (2015). YouTube stickiness: The needs, personal, and environmental perspective. *Internet Research*, 25 (1), pp.85-106, <https://doi.org/10.1108/IntR-11-2013-0236>
52. Costa, V. D., Tran, V. L., Turchi, J., & Averbeck, B. B. (2014). Dopamine modulates novelty seeking behavior during decision making. *Behavioral Neuroscience*, 128(5), 556–566. <https://doi.org/10.1037/a0037128>
53. COUNCIL ON COMMUNICATIONS AND MEDIA (2016). Media and Young Minds. *Pediatrics*, 138(5), e20162591. <https://doi.org/10.1542/peds.2016-2591>
54. COUNCIL ON COMMUNICATIONS AND MEDIA (2016). Media Use in School-Aged Children and Adolescents. *Pediatrics*, 138(5), e20162592. <https://doi.org/10.1542/peds.2016-2592>
55. Cunningham, S., Hudson, C. C., & Harkness, K. (2021). Social Media and Depression Symptoms: a Meta-Analysis. *Research on child and adolescent psychopathology*, 49(2), 241–253. <https://doi.org/10.1007/s10802-020-00715-7>

56. Danish Competition and Consumer Authority. (2025). Young consumers and social media.  
<https://www.em.dk/Media/638744252848589136/KFST%20analyse%20-%20Young-consumers-and-social-media.pdf>
57. Davey, C. G., Allen, N. B., Harrison, B. J., Dwyer, D. B., & Yücel, M. (2010). Being liked activates primary reward and midline self-related brain regions. *Human brain mapping*, 31(4), 660–668. <https://doi.org/10.1002/hbm.20895>
58. Davis, C. G., & Goldfield, G. S. (2025). Limiting social media use decreases depression, anxiety, and fear of missing out in youth with emotional distress: A randomized controlled trial. *Psychology of Popular Media*, 14(1), 1–11.  
<https://doi.org/10.1037/ppm0000536>
59. Davis, L. C., Diianni, A. T., Drumheller, S. R., Elansary, N. N., D'Ambrozio, G. N., Herrawi, F., Piper, B. J., & Cosgrove, L. (2024). Undisclosed financial conflicts of interest in DSM-5-TR: cross sectional analysis. *BMJ (Clinical research ed.)*, 384, e076902. <https://doi.org/10.1136/bmj-2023-076902>
60. de Jong, E., Visscher, T. L., HiraSing, R. A., Heymans, M. W., Seidell, J. C., & Renders, C. M. (2013). Association between TV viewing, computer use and overweight, determinants and competing activities of screen time in 4- to 13-year-old children. *International journal of obesity* (2005), 37(1), 47–53. <https://doi.org/10.1038/ijo.2011.244>
61. De, D., El Jamal, M., Aydemir, E., & Khera, A. (2025). Social Media Algorithms and Teen Addiction: Neurophysiological Impact and Ethical Considerations. *Cureus*, 17(1), e77145. <https://doi.org/10.7759/cureus.77145>
62. Deters, F. G., & Mehl, M. R. (2013). Does Posting Facebook Status Updates Increase or Decrease Loneliness? An Online Social Networking Experiment. *Social psychological and personality science*, 4(5), 10.1177/1948550612469233.  
<https://doi.org/10.1177/1948550612469233>
63. Dunbar, R. I. M., Arnaboldi, V., Conti, M., & Passarella, A. (2015). The structure of online social networks mirrors those in the offline world. *Social Networks*, 43, 39–47.  
<https://doi.org/10.1016/j.socnet.2015.04.005>
64. Ellis, D. A. (2019). Are smartphones really that bad? Improving the psychological measurement of technology-related behaviors. *Computers in Human Behavior*, 97, 60–66. <https://doi.org/10.1016/j.chb.2019.03.006>
65. Elphinston, R. A., Gullo, M. J., & Connor, J. P. (2022). Validation of the Facebook addiction questionnaire. *Personality and individual differences*, 195, 111619.
66. Epstein, L. H., Roemmich, J. N., Cavanaugh, M. D., & Paluch, R. A. (2011). The motivation to be sedentary predicts weight change when sedentary behaviors are reduced. *The international journal of behavioral nutrition and physical activity*, 8, 13.  
<https://doi.org/10.1186/1479-5868-8-13>
67. European Interest. (2023, October 25). MEPs call for ban on addictive techniques like endless scrolling or automatic play. <https://www.europeaninterest.eu/meps-call-for-ban-on-addictive-techniques-like-endless-scrolling-or-automatic-play/>
68. Fareri, D. S., & Delgado, M. R. (2014). Social Rewards and Social Networks in the Human Brain. *The Neuroscientist : a review journal bringing neurobiology, neurology and psychiatry*, 20(4), 387–402. <https://doi.org/10.1177/1073858414521869>
69. Fassi, L., Ferguson, A. M., Przybylski, A. K., Ford, T. J., & Orben, A. (2025). Social media use in adolescents with and without mental health conditions. *Nature human*



- behaviour, 10.1038/s41562-025-02134-4. Advance online publication. <https://doi.org/10.1038/s41562-025-02134-4>
70. Fassi, L., Thomas, K., Parry, D. A., Leyland-Craggs, A., Ford, T. J., & Orben, A. (2024). Social Media Use and Internalizing Symptoms in Clinical and Community Adolescent Samples: A Systematic Review and Meta-Analysis. *JAMA pediatrics*, 178(8), 814–822. <https://doi.org/10.1001/jamapediatrics.2024.2078>
  71. Faverio, M. (2025, July 10). 10 facts about teens and social media. Pew Research Center. <https://www.pewresearch.org/short-reads/2025/07/10/10-facts-about-teens-and-social-media/>
  72. Faverio, M., Sidoti, O., & Pew Research Center. (2024). Teens, Social Media and Technology 2024. In Pew Research Center. <https://www.pewresearch.org>
  73. Ferguson, C. J. (2024). Do social media experiments prove a link with mental health: A methodological and meta-analytic review. *Psychology of Popular Media*. Advance online publication. <https://doi.org/10.1037/ppm0000541>
  74. Flannery, J. S., Burnell, K., Kwon, S. J., Jorgensen, N. A., Prinstein, M. J., Lindquist, K. A., & Telzer, E. H. (2024). Developmental changes in brain function linked with addiction-like social media use two years later. *Social cognitive and affective neuroscience*, 19(1), nsae008. <https://doi.org/10.1093/scan/nsae008>
  75. Fliessbach, K., Weber, B., Trautner, P., Dohmen, T., Sunde, U., Elger, C. E., & Falk, A. (2007). Social comparison affects reward-related brain activity in the human ventral striatum. *Science (New York, N.Y.)*, 318(5854), 1305–1308. <https://doi.org/10.1126/science.1145876>
  76. Fournier, L., Schimmenti, A., Musetti, A., Boursier, V., Flayelle, M., Cataldo, I., Starcevic, V., & Billieux, J. (2023). Deconstructing the components model of addiction: an illustration through "addictive" use of social media. *Addictive behaviors*, 143, 107694. <https://doi.org/10.1016/j.addbeh.2023.107694>
  77. Fox, K. A., Nick, E., Nesi, J., Telzer, E. H., & Prinstein, M. J. (2023). Why Haven't You Texted Me Back? Adolescents' Digital Entrapment, Friendship Conflict, and Perceived General Health. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, 1–11. Advance online publication. <https://doi.org/10.1080/15374416.2023.2261543>
  78. Gao, Y., Hu, Y., Wang, J., Liu, C., Im, H., Jin, W., Zhu, W., Ge, W., Zhao, G., Yao, Q., Wang, P., Zhang, M., Niu, X., He, Q., & Wang, Q. (2025). Neuroanatomical and functional substrates of the short video addiction and its association with brain transcriptomic and cellular architecture. *NeuroImage*, 307, 121029. <https://doi.org/10.1016/j.neuroimage.2025.121029>
  79. Garrett, S. L., Burnell, K., Armstrong-Carter, E. L., Nelson, B. W., Prinstein, M. J., & Telzer, E. H. (2023). Links Between Objectively-Measured Hourly Smartphone Use and Adolescent Wake Events Across Two Weeks. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, 1–11. Advance online publication. <https://doi.org/10.1080/15374416.2023.2286595>
  80. Gill, P. S., Kamath, A., & Gill, T. S. (2012). Distraction: an assessment of smartphone usage in health care work settings. *Risk Management and Healthcare Policy*, 5, pp.105–114. <http://doi.org/10.2147/RMHP.S34813>



81. Gold, A. (2023, March 6). Tech platforms struggle to verify their users' age. Axios. <https://www.axios.com/2023/03/06/age-checks-online-children-social-media-privacy>
82. Gottfried, J., Anderson, M., & Nolan, H. (2024). Americans' social media use. Pew Research Center. [https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2024/01/PI\\_2024.01.31\\_Social-Media-use\\_report.pdf](https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2024/01/PI_2024.01.31_Social-Media-use_report.pdf)
83. Gunantillake, R. (2016). What if tech tried to be healing instead of just addictive? The Guardian.
84. Haferkamp, N., & Krämer, N. C. (2011). Social comparison 2.0: examining the effects of online profiles on social-networking sites. *Cyberpsychology, behavior and social networking*, 14(5), 309–314. <https://doi.org/10.1089/cyber.2010.0120>
85. Halpern, D., & Gibbs, J. (2013). Social media as a catalyst for online deliberation? Exploring the affordances of Facebook and YouTube for political expression. *Computers in Human Behavior*, 29(3), 1159–1168. <https://doi.org/10.1016/j.chb.2012.10.008>
86. Haruno, M., Kimura, M., & Frith, C. D. (2014). Activity in the nucleus accumbens and amygdala underlies individual differences in prosocial and individualistic economic choices. *Journal of cognitive neuroscience*, 26(8), 1861–1870. [https://doi.org/10.1162/jocn\\_a\\_00589](https://doi.org/10.1162/jocn_a_00589)
87. He, Q., Turel, O., & Bechara, A. (2017). Brain anatomy alterations associated with Social Networking Site (SNS) addiction. *Scientific reports*, 7, 45064. <https://doi.org/10.1038/srep45064>
88. Heffer, T., Good, M., Daly, O., MacDonell, E., & Willoughby, T. (2019). The Longitudinal Association Between Social-Media Use and Depressive Symptoms Among Adolescents and Young Adults: An Empirical Reply to Twenge et al. (2018). *Clinical Psychological Science*, 7(3), 462-470. <https://doi.org/10.1177/2167702618812727>
89. Howard-Jones, P. (2011). Impact of digital technologies on human well-being. Nominet Trust Presentation. <https://www.thechildrensmediafoundation.org/wp-content/uploads/2014/02/Howard-Jones-2011-impact-digital-technologies-on-wellbeing-copy1.pdf>
90. Humphries, M. (2021, October 22). China's TikTok adds mandatory 5-Second pause between videos. PCMAG. <https://www.pcmag.com/news/chinas-tiktok-adds-mandatory-5-second-pause-between-videos>
91. Hung, L. W., Neuner, S., Polepalli, J. S., Beier, K. T., Wright, M., Walsh, J. J., Lewis, E. M., Luo, L., Deisseroth, K., Dölen, G., & Malenka, R. C. (2017). Gating of social reward by oxytocin in the ventral tegmental area. *Science (New York, N.Y.)*, 357(6358), 1406–1411. <https://doi.org/10.1126/science.aan4994>
92. Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology*, 37(10), 751–768. <https://doi.org/10.1521/jscp.2018.37.10.751>
93. Izuma, K., Saito, D. N., & Sadato, N. (2008). Processing of social and monetary rewards in the human striatum. *Neuron*, 58(2), 284–294. <https://doi.org/10.1016/j.neuron.2008.03.020>
94. Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education*, 58(1), 162–171. <https://doi.org/10.1016/j.compedu.2011.08.004>
95. Kelleghan, A. R., Leventhal, A. M., Cruz, T. B., Bello, M. S., Liu, F., Unger, J. B., Riehm, K., Cho, J., Kirkpatrick, M. G., McConnell, R. S., & Barrington-Trimis, J. L.

- (2020). Digital media use and subsequent cannabis and tobacco product use initiation among adolescents. *Drug and alcohol dependence*, 212, 108017. <https://doi.org/10.1016/j.drugalcdep.2020.108017>
96. Kelly, Y., Zilanwala, A., Booker, C. & Sacker, A. Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study. *EClinicalMedicine* 6(2018) 59-68.
  97. Keyes, K. M., & Platt, J. M. (2023). Annual Research Review: Sex, gender, and internalizing conditions among adolescents in the 21st century - trends, causes, consequences. *Journal of child psychology and psychiatry, and allied disciplines*, 10.1111/jcpp.13864. Advance online publication. <https://doi.org/10.1111/jcpp.13864>
  98. Khalaf A M, Alubied A A, Khalaf A M, et al. (August 05, 2023) The Impact of Social Media on the Mental Health of Adolescents and Young Adults: A Systematic Review. *Cureus* 15(8): e42990. doi:10.7759/cureus.42990
  99. Kim, S. H., Baik, S. H., Park, C. S., Kim, S. J., Choi, S. W., & Kim, S. E. (2011). Reduced striatal dopamine D2 receptors in people with Internet addiction. *Neuroreport*, 22(8), 407–411. <https://doi.org/10.1097/WNR.0b013e328346e16e>
  100. Kirik, A., Arslan, A., Çetinkaya, A., & Gül, M. (2015). A quantitative research on the level of social media addiction among young people in Turkey. *International Journal of Sport Culture and Science*, 3(3), 108-122.
  101. Kleemans, M., Daalmans, S., Carbaat, I., & Anschütz, D. (2018). Picture perfect: The direct effect of manipulated instagram photos on body image in adolescent girls. *Media Psychology*, 21(1), 93–110. <https://doi.org/10.1080/15213269.2016.1257392>
  102. Klucharev, V., Hytönen, K., Rijpkema, M., Smidts, A., & Fernández, G. (2009). Reinforcement learning signal predicts social conformity. *Neuron*, 61(1), 140–151. <https://doi.org/10.1016/j.neuron.2008.11.027>
  103. Koetsier, J. (2020, January 18). Digital crack Cocaine: the science behind TikTok's success. *Forbes*. <https://www.forbes.com/sites/johnkoetsier/2020/01/18/digital-crack-cocaine-the-science-behind-tiktoks-success/>
  104. Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology*, 35(1), 217–238. <https://doi.org/10.1038/npp.2009.110>
  105. Koob, G. F., & Volkow, N. D. (2016). Neurobiology of addiction: a neurocircuitry analysis. *The lancet. Psychiatry*, 3(8), 760–773. [https://doi.org/10.1016/S2215-0366\(16\)00104-8](https://doi.org/10.1016/S2215-0366(16)00104-8)
  106. Kramer, A. D., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences of the United States of America*, 111(24), 8788–8790. <https://doi.org/10.1073/pnas.1320040111>
  107. Kraus, R. (2020, November 23). Snap launches TikTok competitor Spotlight with payouts for viral posts. *Mashable*. <https://mashable.com/article/snapchat-introduces-spotlight>
  108. Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shablack, H., Jonides, J., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PloS one*, 8(8), e69841. <https://doi.org/10.1371/journal.pone.0069841>
  109. Labrague, L. J. (2014). Facebook use and adolescents' emotional states of depression, anxiety, and stress. *Health science journal*, 8(1), 80.

110. Lembke A. (2012). Time to abandon the self-medication hypothesis in patients with psychiatric disorders. *The American journal of drug and alcohol abuse*, 38(6), 524–529. <https://doi.org/10.3109/00952990.2012.694532>
111. Lembke, A. (2016). *Drug dealer, MD: how doctors were duped, patients got hooked, and why it's so hard to stop*. Johns Hopkins University Press.
112. Lembke, A. (2021). *Dopamine nation: finding balance in the age of indulgence*. Dutton, an imprint of Penguin Random House LLC.
113. Lembke, A. (2024). *The Official Dopamine Nation Workbook: A Practical Guide to Finding Balance in the Age of Indulgence*. Dutton, an imprint of Penguin Random House LLC.
114. Linnet, J., Peterson, E., Doudet, D. J., Gjedde, A., & Møller, A. (2010). Dopamine release in ventral striatum of pathological gamblers losing money. *Acta Psychiatrica Scandinavica*, 122(4), 326–333. <https://doi.org/10.1111/j.1600-0447.2010.01591.x>
115. Linnet, J., Thomsen, K. R., Møller, A., & Callesen, M. B. (2010). Event frequency, excitement and desire to gamble, among pathological gamblers. *International Gambling Studies*, 10(2), 177–188. <https://doi.org/10.1080/14459795.2010.502181>
116. Liu, M., Kamper-DeMarco, K. E., Zhang, J., Xiao, J., Dong, D., & Xue, P. (2022). Time Spent on Social Media and Risk of Depression in Adolescents: A Dose-Response Meta-Analysis. *International journal of environmental research and public health*, 19(9), 5164. <https://doi.org/10.3390/ijerph19095164>
117. Luxi Shen, Ayelet Fishbach, Christopher K. Hsee, The Motivating-Uncertainty Effect: Uncertainty Increases Resource Investment in the Process of Reward Pursuit, *Journal of Consumer Research*, Volume 41, Issue 5, 1 February 2015, Pages 1301–1315, <https://doi.org/10.1086/679418>
118. Ma, L., Tao, Q., Dang, J., Sun, J., Niu, X., Zhang, M., Kang, Y., Wang, W., Cheng, J., Han, S., & Zhang, Y. (2024). Altered local intrinsic neural activity and molecular architecture in internet use disorders. *Brain research bulletin*, 216, 111052. <https://doi.org/10.1016/j.brainresbull.2024.111052>
119. Manago, A. M., Walsh, A. S., & Barsigian, L. L. (2023). The contributions of gender identification and gender ideologies to the purposes of social media use in adolescence. *Frontiers in psychology*, 13, 1011951. <https://doi.org/10.3389/fpsyg.2022.1011951>
120. Massing-Schaffer, M., Nesi, J., Telzer, E. H., Lindquist, K. A., & Prinstein, M. J. (2022). Adolescent Peer Experiences and Prospective Suicidal Ideation: The Protective Role of Online-Only Friendships. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology*, American Psychological Association, Division 53, 51(1), 49–60. <https://doi.org/10.1080/15374416.2020.1750019>
121. Mauri, M., Cipresso, P., Balgera, A., Villamira, M., & Riva, G. (2011). Why is Facebook so successful? Psychophysiological measures describe a core flow state while using Facebook. *Cyberpsychology, behavior and social networking*, 14(12), 723–731. <https://doi.org/10.1089/cyber.2010.0377>
122. Maza, M. T., Fox, K. A., Kwon, S. J., Flannery, J. E., Lindquist, K. A., Prinstein, M. J., & Telzer, E. H. (2023). Association of Habitual Checking Behaviors on Social Media With Longitudinal Functional Brain Development. *JAMA pediatrics*, 177(2), 160–167. <https://doi.org/10.1001/jamapediatrics.2022.4924>

123. Maza, M. T., Kwon, S. J., Jorgensen, N. A., Capella, J., Prinstein, M. J., Lindquist, K. A., & Telzer, E. H. (2024). Neurobiological sensitivity to popular peers moderates daily links between social media use and affect. *Developmental cognitive neuroscience*, 65, 101335. <https://doi.org/10.1016/j.dcn.2023.101335>
124. McComb, C. A., Vanman, E. J., & Tobin, S. J. (2023). A Meta-Analysis of the Effects of Social Media Exposure to Upward Comparison Targets on Self-Evaluations and Emotions. *Media Psychology*, 26(5), 612–635. <https://doi.org/10.1080/15213269.2023.2180647>
125. Meier, A., Reinecke, L., & Meltzer, C. E. (2016). “Facebocrastination”? Predictors of using Facebook for procrastination and its effects on students’ well-being. *Computers in Human Behavior*, 64, 65–76. doi:10.1016/j.chb.2016.06.011
126. Merelli, A. (2024, June 17). What’s the evidence for the surgeon general’s proposed social media warning? STAT. <https://www.statnews.com/2024/06/17/surgeon-general-social-media-warning-praise-pushback/>
127. Meshi, D., Morawetz, C., & Heekeren, H. R. (2013). Nucleus accumbens response to gains in reputation for the self relative to gains for others predicts social media use. *Frontiers in human neuroscience*, 7, 439. <https://doi.org/10.3389/fnhum.2013.00439>
128. Meshi, D., Tamir, D. I., & Heekeren, H. R. (2015). The Emerging Neuroscience of Social Media. *Trends in cognitive sciences*, 19(12), 771–782. <https://doi.org/10.1016/j.tics.2015.09.004>
129. Metro Creative Services. (2017, January 4) . Resolving to unplug from devices. Vinton Jackson Courier. [vintonjacksoncourier.com/timesjournal/resolving-to-unplug-from-devices/article\\_e973e69-a988-5412-912a-2d19054c6c6e.html](http://vintonjacksoncourier.com/timesjournal/resolving-to-unplug-from-devices/article_e973e69-a988-5412-912a-2d19054c6c6e.html)
130. Milinski, M., Semmann, D., & Krambeck, H. J. (2002). Reputation helps solve the 'tragedy of the commons'. *Nature*, 415(6870), 424–426. <https://doi.org/10.1038/415424a>
131. Miller, S. (2022, June 2). The Addictiveness of Social Media: How Teens Get Hooked. Living Well. Jefferson Health. <https://www.jeffersonhealth.org/your-health/living-well/the-addictiveness-of-social-media-how-teens-get-hooked>
132. Mojtabai, R., Olfson, M., & Han, B. (2016). National Trends in the Prevalence and Treatment of Depression in Adolescents and Young Adults. *Pediatrics*, 138(6), e20161878. <https://doi.org/10.1542/peds.2016-1878>
133. Montag, C., Markowetz, A., Blaszkiewicz, K., Andone, I., Lachmann, B., Sariyska, R., Trendafilov, B., Eibes, M., Kolb, J., Reuter, M., Weber, B., & Markett, S. (2017). Facebook usage on smartphones and gray matter volume of the nucleus accumbens. *Behavioural brain research*, 329, 221–228. <https://doi.org/10.1016/j.bbr.2017.04.035>
134. Morelli, S. A., Sacchet, M. D., & Zaki, J. (2015). Common and distinct neural correlates of personal and vicarious reward: A quantitative meta-analysis. *NeuroImage*, 112, 244–253. <https://doi.org/10.1016/j.neuroimage.2014.12.056>
135. Morelli, S. A., Torre, J. B., & Eisenberger, N. I. (2014). The neural bases of feeling understood and not understood. *Social cognitive and affective neuroscience*, 9(12), 1890–1896. <https://doi.org/10.1093/scan/nst191>
136. Murthy V. Surgeon General: Why I'm Calling for a Warning Label on Social Media Platforms. *The New York Times*. Opinion. 2024 Jun. 17. <https://www.nytimes.com/2024/06/17/opinion/social-media-health-warning.html>

137. Myrick, J. G. (2015). Emotion regulation, procrastination, and watching cat videos online: Who watches Internet cats, why, and to what effect?. *Computers in Human Behavior*, 52, 168-176.
138. Myrtek, M., Scharff, C., Brügger, G., & Muller, W. (1996). Physiological, behavioral, and psychological effects associated with television viewing in schoolboys: An exploratory study. *The Journal of Early Adolescence*, 16(3), 301-323.
139. Nagata, J. M., Otmar, C. D., Shim, J., Balasubramanian, P., Cheng, C. M., Li, E. J., Al-Shoaibi, A. A. A., Shao, I. Y., Ganson, K. T., Testa, A., Kiss, O., He, J., & Baker, F. C. (2025). Social Media Use and Depressive Symptoms During Early Adolescence. *JAMA network open*, 8(5), e2511704. <https://doi.org/10.1001/jamanetworkopen.2025.11704>
140. Natalie Johnstonn. (n.d.). Experience [LinkedIn page] LinkedIn. <https://www.linkedin.com/in/natalieerinjohnston>
141. National Academies of Sciences, Engineering, and Medicine. 2024. Social media and adolescent health. Washington, DC: The National Academies Press. <https://doi.org/10.17226/27396>.
142. National Institute on Alcohol Abuse and Alcoholism (n.d.) Mission Statement. <https://www.niaaa.nih.gov/our-work/mission-statement>
143. National Institute on Drug Abuse. (n.d.) About NIDA. <https://nida.nih.gov/about-nida>
144. Nesi, J., Rothenberg, W. A., Bettis, A. H., Massing-Schaffer, M., Fox, K. A., Telzer, E. H., Lindquist, K. A., & Prinstein, M. J. (2022). Emotional Responses to Social Media Experiences Among Adolescents: Longitudinal Associations with Depressive Symptoms. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, 51(6), 907–922. <https://doi.org/10.1080/15374416.2021.1955370>
145. Nesi, J., Telzer, E. H., & Prinstein, M. J. (2020). Adolescent Development in the Digital Media Context. *Psychological inquiry*, 31(3), 229–234. <https://doi.org/10.1080/1047840x.2020.1820219>
146. Nesi, J., Telzer, E. H., & Prinstein, M. J. (Eds.). (2022). *Handbook of adolescent digital media use and mental health*. Cambridge University Press.
147. NIAAA. (2025, February) Understanding Alcohol Drinking Patterns. National Institutes of Health. <https://www.niaaa.nih.gov/alcohols-effects-health/alcohol-drinking-patterns>
148. Nick, E. A., Kilic, Z., Nesi, J., Telzer, E. H., Lindquist, K. A., & Prinstein, M. J. (2022). Adolescent Digital Stress: Frequencies, Correlates, and Longitudinal Association With Depressive Symptoms. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*, 70(2), 336–339. <https://doi.org/10.1016/j.jadohealth.2021.08.025>
149. NIDA. 2020, July 6. Drug Misuse and Addiction. Retrieved from <https://nida.nih.gov/publications/drugs-brains-behavior-science-addiction/drug-misuse-addiction> on 2025, March 29
150. Northoff, G., Heinzl, A., de Greck, M., Bermpohl, F., Dobrowolny, H., & Panksepp, J. (2006). Self-referential processing in our brain--a meta-analysis of imaging studies on the self. *NeuroImage*, 31(1), 440–457. <https://doi.org/10.1016/j.neuroimage.2005.12.002>
151. Office of the Surgeon General (OSG). (2023). *Social Media and Youth Mental Health: The U.S. Surgeon General’s Advisory*. US Department of Health and Human Services.
152. OJJDP Statistical Briefing Book. Online. Available: <https://ojjdp.ojp.gov/statistical-briefing-book/population/faqs/QA01104>. Released on 10/13/2021



153. O'Keeffe, G. S., Clarke-Pearson, K., & Council on Communications and Media (2011). The impact of social media on children, adolescents, and families. *Pediatrics*, 127(4), 800–804. <https://doi.org/10.1542/peds.2011-0054>
154. Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature human behaviour*, 3(2), 173–182. <https://doi.org/10.1038/s41562-018-0506-1>
155. Orosz, G., Tóth-Király, I., & Bőthe, B. (2016). Four facets of Facebook intensity—the development of the multidimensional Facebook intensity scale. *Personality and individual differences*, 100, 95-104.
156. Pakpour, A. H., Jafari, E., Zanjanchi, F., Potenza, M. N., & Lin, C. (2023). The YouTube Addiction Scale: psychometric evidence for a new instrument developed based on the component model of addiction. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-023-01216-6>
157. Park, S. (2012). Dimensions of digital media literacy and the relationship with social exclusion. *Media International Australia*, 142(1), 87-100.
158. Paschke, K., Austermann, M. I., & Thomasius, R. (2021). ICD-11-Based Assessment of Social Media Use Disorder in Adolescents: Development and Validation of the Social Media Use Disorder Scale for Adolescents. *Frontiers in psychiatry*, 12, 661483. <https://doi.org/10.3389/fpsy.2021.661483>
159. Pawlowski, C. S., Nielsen, J. V., & Schmidt, T. (2021). A Ban on Smartphone Usage during Recess Increased Children's Physical Activity. *International journal of environmental research and public health*, 18(4), 1907. <https://doi.org/10.3390/ijerph18041907>
160. Pellegrino, A., Stasi, A., & Bhatiasavi, V. (2022). Research trends in social media addiction and problematic social media use: A bibliometric analysis. *Frontiers in psychiatry*, 13, 1017506. <https://doi.org/10.3389/fpsy.2022.1017506>
161. Peng, Z., Jia, Q., Mao, J., Luo, X., Huang, A., Zheng, H., Jiang, S., Ma, Q., Ma, C., & Yi, Q. (2025). Neurotransmitters crosstalk and regulation in the reward circuit of subjects with behavioral addiction. *Frontiers in psychiatry*, 15, 1439727. <https://doi.org/10.3389/fpsy.2024.1439727>
162. Peper, E., Lin, I. M., & Harvey, R. (2017). Posture and mood: Implications and applications to therapy. *Biofeedback*, 45(2), 42-48
163. Plaintiff's Second Amended Master Complaint (Personal Injury), In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, No. 4:22-MD-3047 (N.D. Cal 2023), Dkt. 494
164. Primack, B. A., Shensa, A., Sidani, J. E., Escobar-Viera, C. G., & Fine, M. J. (2021). Temporal Associations Between Social Media Use and Depression. *American journal of preventive medicine*, 60(2), 179–188. <https://doi.org/10.1016/j.amepre.2020.09.014>
165. Prinstein, M. J., Nesi, J., & Telzer, E. H. (2020). Commentary: An updated agenda for the study of digital media use and adolescent development—future directions following Odgers & Jensen (2020). *Journal of Child Psychology and Psychiatry*, 61(3), 349-352.
166. Qu, T. (2021, October 22). TikTok's China sibling Douyin launches mandatory five-second pauses in video feed to curb user addiction. *South China Morning Post*
167. Radesky, J. S., Kistin, C. J., Zuckerman, B., Nitzberg, K., Gross, J., Kaplan-Sanoff, M., Augustyn, M., & Silverstein, M. (2014). Patterns of mobile device use by caregivers and

- children during meals in fast food restaurants. *Pediatrics*, 133(4), e843–e849.  
<https://doi.org/10.1542/peds.2013-3703>
168. Ramadhan, R. N., Rampengan, D. D., Yumnanisha, D. A., Setiono, S. B., Tjandra, K. C., Ariyanto, M. V., Idrisov, B., & Empitu, M. A. (2024). Impacts of digital social media detox for mental health: A systematic review and meta-analysis. *Narra J*, 4(2), e786.  
<https://doi.org/10.52225/narra.v4i2.786>
  169. Riehm, K. E., Feder, K. A., Tormohlen, K. N., Crum, R. M., Young, A. S., Green, K. M., Pacek, L. R., La Flair, L. N., & Mojtabai, R. (2019). Associations Between Time Spent Using Social Media and Internalizing and Externalizing Problems Among US Youth. *JAMA psychiatry*, 76(12), 1266–1273. <https://doi.org/10.1001/jamapsychiatry.2019.2325>
  170. Robinson, M. J., Anselme, P., Fischer, A. M., & Berridge, K. C. (2014). Initial uncertainty in Pavlovian reward prediction persistently elevates incentive salience and extends sign-tracking to normally unattractive cues. *Behavioural brain research*, 266, 119–130. <https://doi.org/10.1016/j.bbr.2014.03.004>
  171. Rosen, L. (2016). Sleeping with technology: Harming your brain one night at a time. *Huffington Post*. [huffpost.com/entry/sleeping-with-technology\\_b\\_9934960](http://huffpost.com/entry/sleeping-with-technology_b_9934960)
  172. Ruff, C. C., & Fehr, E. (2014). The neurobiology of rewards and values in social decision making. *Nature reviews. Neuroscience*, 15(8), 549–562. <https://doi.org/10.1038/nrn3776>
  173. Rutherford, B. N., Lim, C. C. W., Johnson, B., Cheng, B., Chung, J., Huang, S., Sun, T., Leung, J., Stjepanović, D., & Chan, G. C. K. (2023). #TurntTrending: a systematic review of substance use portrayals on social media platforms. *Addiction (Abingdon, England)*, 118(2), 206–217. <https://doi.org/10.1111/add.16020>
  174. Şahin, C. (2018). Social Media Addiction Scale--Student Form (SMAS-SF) [Database record]. *APA PsycTests*. <https://doi.org/10.1037/t72756-000>
  175. Salem, A. A. M. S., Almenaye, N. S., & Andreassen, C. S. (2016). A psychometric evaluation of Bergen Facebook Addiction Scale (BFAS) of university students. *International Journal of Psychology and Behavioral Sciences*, 6(5), 199-205.
  176. Satchell, L. P., Fido, D., Harper, C. A., Shaw, H., Davidson, B., Ellis, D. A., Hart, C. M., Jalil, R., Bartoli, A. J., Kaye, L. K., Lancaster, G. L. J., & Pavetich, M. (2021). Development of an Offline-Friend Addiction Questionnaire (O-FAQ): Are most people really social addicts? *Behavior Research Methods*, 53(3), 1097–1106.  
<https://doi.org/10.3758/s13428-020-01462-9>
  177. Saxe, R., & Kanwisher, N. (2003). People thinking about thinking people. The role of the temporo-parietal junction in "theory of mind". *NeuroImage*, 19(4), 1835–1842.  
[https://doi.org/10.1016/s1053-8119\(03\)00230-1](https://doi.org/10.1016/s1053-8119(03)00230-1)
  178. Schmidt-Persson, J., Rasmussen, M. G. B., Sørensen, S. O., Mortensen, S. R., Olesen, L. G., Brage, S., Kristensen, P. L., Bilenberg, N., & Grøntved, A. (2024). Screen Media Use and Mental Health of Children and Adolescents: A Secondary Analysis of a Randomized Clinical Trial. *JAMA network open*, 7(7), e2419881.  
<https://doi.org/10.1001/jamanetworkopen.2024.19881>
  179. Schou Andreassen, C., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors*, 30(2), 252–262.  
<https://doi.org/10.1037/adb0000160>



180. Schultz W. (2011). Potential vulnerabilities of neuronal reward, risk, and decision mechanisms to addictive drugs. *Neuron*, 69(4), 603–617.  
<https://doi.org/10.1016/j.neuron.2011.02.014>
181. Schultz, W., Dayan, P., & Montague, P. R. (1997). A neural substrate of prediction and reward. *Science (New York, N.Y.)*, 275(5306), 1593–1599.  
<https://doi.org/10.1126/science.275.5306.1593>
182. Semken, C., & Rossell, D. (2022). Specification Analysis for Technology Use and Teenager Well-Being: Statistical Validity and a Bayesian Proposal. *Journal of the Royal Statistical Society Series C: Applied Statistics*, 71(5), 1330–1355.  
<https://doi.org/10.1111/rssc.12578>
183. Shah Nawaz, M. G., & Rehman, U. (2020). Social Networking Addiction Scale. *Cogent Psychology*, 7(1). <https://doi.org/10.1080/23311908.2020.1832032>
184. Shakya, H. B., & Christakis, N. A. (2017). Association of Facebook Use With Compromised Well-Being: A Longitudinal Study. *American journal of epidemiology*, 185(3), 203–211. <https://doi.org/10.1093/aje/kww189>
185. Shaw, P., Kabani, N. J., Lerch, J. P., Eckstrand, K., Lenroot, R., Gogtay, N., Greenstein, D., Clasen, L., Evans, A., Rapoport, J. L., Giedd, J. N., & Wise, S. P. (2008). Neurodevelopmental trajectories of the human cerebral cortex. *The Journal of neuroscience : the official journal of the Society for Neuroscience*, 28(14), 3586–3594.  
<https://doi.org/10.1523/JNEUROSCI.5309-07.2008>
186. Shen, L., Fishbach, A., & Hsee, C. K. (2015). The motivating-uncertainty effect: Uncertainty increases resource investment in the process of reward pursuit. *Journal of Consumer Research*, 41(5), 1301–1315. <https://doi.org/10.1086/679418>
187. Sherer, J., & Levounis, P. (2024). Special Report: Is social media misuse a bad habit or harmful addiction? *Psychiatric News*, 59(04). <https://doi.org/10.1176/appi.pn.2024.04.4.5>
188. Sherman, L. E., Greenfield, P. M., Hernandez, L. M., & Dapretto, M. (2018). Peer influence via instagram: Effects on brain and behavior in adolescence and young adulthood. *Child Development*, 89, 37–47
189. Sherman, L. E., Payton, A. A., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2016). The Power of the Like in Adolescence: Effects of Peer Influence on Neural and Behavioral Responses to Social Media. *Psychological science*, 27(7), 1027–1035.  
<https://doi.org/10.1177/0956797616645673>
190. Snapchat Support (n.d.) How Much does it restore to a Snapstreak?. Snap Inc.  
<https://help.snapchat.com/hc/en-us/articles/13086861638676-How-much-does-it-cost-to-restore-a-Snapstreak>
191. Snapchat Support (n.d.) What do my Friend Emojis Mean on Snapchat? Snap Inc.  
<https://help.snapchat.com/hc/en-us/articles/7012335460372-What-do-my-Friend-Emojis-mean-on-Snapchat>
192. Somerville, L. H. (2013). The Teenage Brain: Sensitivity to Social Evaluation. *Current Directions in Psychological Science*, 22(2), 121–127.  
<https://doi.org/10.1177/0963721413476512>
193. Somerville, L. H., Hare, T., & Casey, B. J. (2011). Frontostriatal maturation predicts cognitive control failure to appetitive cues in adolescents. *Journal of cognitive neuroscience*, 23(9), 2123–2134. <https://doi.org/10.1162/jocn.2010.21572>
194. Stanford Center for Digital Health. (2025). Stanford Youth Safety and Digital Wellbeing Report, 2025. Stanford University.

- [https://cdh.stanford.edu/sites/g/files/sbiybj29486/files/media/file/youth\\_safety\\_and\\_digital\\_wellbeing\\_report\\_2025.pdf](https://cdh.stanford.edu/sites/g/files/sbiybj29486/files/media/file/youth_safety_and_digital_wellbeing_report_2025.pdf)
195. Stein, D. (2024, April 30). Fundamental Flaws in Meta-Analytical Review of Social Media Experiments. The Shores of Academia.  
<https://shoresofacademia.substack.com/p/fatally-flawed-social-media-experiments>
  196. Stevic, A., & Matthes, J. (2021). A vicious circle between children's non-communicative smartphone use and loneliness: Parents cannot do much about it. *Telematics and Informatics*, 64, 101677. <https://doi.org/10.1016/j.tele.2021.101677>
  197. Su, C., Zhou, H., Gong, L., Teng, B., Geng, F., & Hu, Y. (2021). Viewing personalized video clips recommended by TikTok activates default mode network and ventral tegmental area. *NeuroImage*, 237, 118136.  
<https://doi.org/10.1016/j.neuroimage.2021.118136>
  198. Substance Abuse and Mental Health Services Administration. (2024). 2023 Companion infographic report: Results from the 2021, 2022, and 2023 National Surveys on Drug Use and Health (SAMHSA Publication No. PEP24-07-020). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.  
<https://www.samhsa.gov/data/report/2021-2022-2023-nsduh-infographic>, at p.9.
  199. Swing, E. L. (2012). Plugged in: The effects of electronic media use on attention problems, cognitive control, visual attention, and aggression (Doctoral dissertation, Iowa State University).
  200. Tamir, D. I., & Mitchell, J. P. (2012). Disclosing information about the self is intrinsically rewarding. *Proceedings of the National Academy of Sciences of the United States of America*, 109(21), 8038–8043. <https://doi.org/10.1073/pnas.1202129109>
  201. Tang, S., Werner-Seidler, A., Torok, M., Mackinnon, A. J., & Christensen, H. (2021). The relationship between screen time and mental health in young people: A systematic review of longitudinal studies. *Clinical psychology review*, 86, 102021.  
<https://doi.org/10.1016/j.cpr.2021.102021>
  202. Telzer, E. H., Dai, J., Capella, J. J., Sobrino, M., & Garrett, S. L. (2022). Challenging stereotypes of teens: Reframing adolescence as window of opportunity. *The American psychologist*, 77(9), 1067–1081. <https://doi.org/10.1037/amp0001109>
  203. Telzer, E. H., Rogers, C. R., & Van Hoorn, J. (2017). Neural Correlates of Social Influence on Risk Taking and Substance Use in Adolescents. *Current addiction reports*, 4(3), 333–341. <https://doi.org/10.1007/s40429-017-0164-9>
  204. The Harris Poll. (2024, October 9). What Gen Z thinks about its social media and smartphone usage - Harris Poll. Harris Poll. <https://theharrispoll.com/briefs/gen-z-social-media-smart-phones/>
  205. Thiagarajan, T. C., Newson, J. J., & Swaminathan, S. (2025). Protecting the Developing Mind in a Digital Age: A Global Policy Imperative. *Journal of Human Development and Capabilities*, 1–12. <https://doi.org/10.1080/19452829.2025.2518313>
  206. Thrul, J., Devkota, J., AlJuboori, D., Regan, T., Alomairah, S., & Vidal, C. (2025). Social media reduction or abstinence interventions are providing mental health benefits—Reanalysis of a published meta-analysis. *Psychology of Popular Media*, 14(2), 207–209.  
<https://doi.org/10.1037/ppm0000574>
  207. Tierney, J. (2013, September 16). The Rational Choices of Crack Addicts. *The New York Times*. <https://www.nytimes.com/2013/09/17/science/the-rational-choices-of-crack-addicts.html>

208. TikTok (2019, April 9) NEW! Screen Time Management and Restricted Mode Features on TikTok. TikTok Newsroom.  
<https://web.archive.org/web/20220329025835/https://newsroom.tiktok.com/en-gb/new-screen-time-management-and-restricted-mode-features-on-tiktok/>
209. Trekels, J., Nesi, J., Burnell, K., Prinstein, M. J., & Telzer, E. H. (2024). Dispositional and Social Correlates of Digital Status Seeking Among Adolescents. *Cyberpsychology, behavior and social networking*, 27(3), 187–193. <https://doi.org/10.1089/cyber.2023.0342>
210. Turel, O., He, Q., Xue, G., Xiao, L., & Bechara, A. (2014). Examination of neural systems sub-serving facebook "addiction". *Psychological reports*, 115(3), 675–695. <https://doi.org/10.2466/18.PR0.115c31z8>
211. Twenge, J. M., & Campbell, W. K. (2019). Media Use Is Linked to Lower Psychological Well-Being: Evidence from Three Datasets. *The Psychiatric quarterly*, 90(2), 311–331. <https://doi.org/10.1007/s11126-019-09630-7>
212. Twenge, J. M., Haidt, J., Joiner, T. E., & Campbell, W. K. (2020). Underestimating digital media harm. *Nature human behaviour*, 4(4), 346–348. <https://doi.org/10.1038/s41562-020-0839-4>
213. Twenge, J. M., Haidt, J., Lozano, J., & Cummins, K. M. (2022). Specification curve analysis shows that social media use is linked to poor mental health, especially among girls. *Acta psychologica*, 224, 103512. <https://doi.org/10.1016/j.actpsy.2022.103512>
214. Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time. *Clinical Psychological Science*, 6(1), 3-17. <https://doi.org/10.1177/2167702617723376>
215. Twenge, J. M., Martin, G. N., & Campbell, W. K. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion (Washington, D.C.)*, 18(6), 765–780. <https://doi.org/10.1037/emo0000403>
216. U.S. Surgeon General. Social Media and Youth Mental Health. The U.S. Surgeon General's Advisory. Office of the U.S. Surgeon General. 2023.
217. University of Massachusetts at Amherst. (2012). How online video stream quality affects viewer behavior. *ScienceDaily*.  
<https://www.sciencedaily.com/releases/2012/11/121113134805.htm#>
218. Upadhayay, N., & Guragain, S. (2017). Internet use and its addiction level in medical students. *Advances in medical education and practice*, 8, 641–647. <https://doi.org/10.2147/AMEP.S142199>
219. Valkenburg, P. M., Keijsers, L., Beyens, I., Pouwels, J. L., van Driel, I. I., Siebers, T., & Verbeij, T. (2022, December 22). E-SMUQ - ESM Social Media Use Questionnaire. Retrieved from [osf.io/7weq5](https://osf.io/7weq5)
220. van den Eijnden, R. J. J. M., Lemmens, J. S., & Valkenburg, P. M. (2016). The Social Media Disorder Scale. *Computers in Human Behavior*, 61, 478–487. <https://doi.org/10.1016/j.chb.2016.03.038>
221. van Essen, C. M., & Van Ouytsel, J. (2023). Snapchat streaks—How are these forms of gamified interactions associated with problematic smartphone use and fear of missing out among early adolescents?. *Telematics and Informatics Reports*, 11, 100087.
222. Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being:

- Experimental and longitudinal evidence. *Journal of experimental psychology. General*, 144(2), 480–488. <https://doi.org/10.1037/xge0000057>
223. Vidal, C., & Sussman, C. (2025). Problematic Social Media Use or Social Media Addiction in Pediatric Populations. *Pediatric clinics of North America*, 72(2), 291–304. <https://doi.org/10.1016/j.pcl.2024.08.005>
  224. Volkow, N. D., Koob, G. F., & McLellan, A. T. (2016). Neurobiologic Advances from the Brain Disease Model of Addiction. *The New England journal of medicine*, 374(4), 363–371. <https://doi.org/10.1056/NEJMra1511480>
  225. Wadsley, M., & Ihssen, N. (2023). A Systematic Review of Structural and Functional MRI Studies Investigating Social Networking Site Use. *Brain sciences*, 13(5), 787. <https://doi.org/10.3390/brainsci13050787>
  226. Wallsten, S. (2013). What are we not doing when we're online. <https://doi.org/10.3386/w19549>
  227. Wartberg, L., Spindler, C., Berber, S., Potzel, K., & Kammerl, R. (2023). A Four-Item Questionnaire to Measure Problematic Social Media Use: The Social Media Disorder Test. *Behavioral sciences (Basel, Switzerland)*, 13(12), 980. <https://doi.org/10.3390/bs13120980>
  228. We Are Social & Meltwater (2023). Digital 2023 Global Overview Report. <https://wearesocial.com/wp-content/uploads/2023/03/Digital-2023-Global-Overview-Report.pdf>
  229. Weinstein, E. (2017). Adolescents' differential responses to social media browsing: Exploring causes and consequences for intervention. *Computers in Human Behavior*, 76, 396–405. <https://doi.org/10.1016/j.chb.2017.07.038>
  230. Westenberg, W. (2016). The influence of YouTubers on teenagers. University of Twente: Thesis dissertation.
  231. Wise, R. A., & Koob, G. F. (2014). The development and maintenance of drug addiction. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology*, 39(2), 254–262. <https://doi.org/10.1038/npp.2013.261>
  232. World Health Organization. (2019). International Statistical Classification of Diseases and Related Health Problems (11th ed.). <https://icd.who.int/>
  233. World Health Organization. Gaming Disorder. <https://www.who.int/standards/classifications/frequently-asked-questions/gaming-disorder>
  234. Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Addictive Screen Use Trajectories and Suicidal Behaviors, Suicidal Ideation, and Mental Health in US Youths. *JAMA*, 10.1001/jama.2025.7829. Advance online publication. <https://doi.org/10.1001/jama.2025.7829>
  235. Xiao, Y., Meng, Y., Brown, T. T., Keyes, K. M., & Mann, J. J. (2025). Associations of Data-Driven Longitudinal Digital Media Use Patterns and Youth Mental Health, Suicidal Ideation and Attempts. *Biological Psychiatry*, 97(9), S10-S11.
  236. Zhang, J., Wang, Y., Li, Q. & Wu, C. The Relationship Between SNS Usage and Disordered Eating Behaviors: A Meta-Analysis. *Frontiers in Psychology*. August 2021 | Volume 12 | Article 641919
  237. Zhu, Y., Zhang, H., & Tian, M. (2015). Molecular and functional imaging of internet addiction. *BioMed research international*, 2015, 378675. <https://doi.org/10.1155/2015/378675>

238. Zuger, A. (2018, December 17). A Doctor's Guide to What to Read on the Opioid Crisis. The New York Times. <https://nytimes.com/2018/12/17/books/review/opioid-abuse-drug-dealer-anna-lemcke.html>

**Deposition Testimony and Exhibits**

239. Deposition of Alex Osborne, January 10, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Snap]
240. Deposition of Alexander Schultz, Volume I, February 27, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
241. Deposition of Alexander Schultz, Volume II, February 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
242. Deposition of [REDACTED], February 6, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
243. Deposition of Amber Renee Miller Burchell, December, 18, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
244. Deposition of Amy Ulucay (Classen), Volume I, February 5, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
245. Deposition of Amy Ulucay (Classen), Volume II, February 10, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
246. Deposition of Andrew Kirchhoff, March 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
247. Deposition of Antigone Davis, Volume I, March 4, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
248. Deposition of Antigone Davis, Volume II, March 5, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
249. Deposition of Aza Raskin, March 17, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Center for Humane Technology - Meta witness]
250. Deposition of Claudia Y. Chan, February 7, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Snap]
251. Deposition of Connor Barrett (Rough), July 17, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [YouTube]



252. Deposition of Cormac Keenan, March 24, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
253. Deposition of [REDACTED], Volume I, December 17, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
254. Deposition of [REDACTED], Volume II, December 18, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
255. Deposition of David Ginsberg, January 9, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
256. Deposition of [REDACTED], DrPH MPH, Volume I, October 22, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
257. Deposition of [REDACTED], DrPH MPH, Volume II, October 23, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
258. Deposition of [REDACTED], Volume I, March 5, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
259. Deposition of [REDACTED], Volume II, March 6, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
260. Deposition of Eric Han, Volume I, March 11, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
261. Deposition of Eric Han, Volume II, March 12, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
262. Deposition of Fred Gilbert, February 20, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [YouTube]
263. Deposition of Genoveva Descalzo (Rough), July 18, 2025, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [YouTube]
264. Deposition of [REDACTED], December 16, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
265. Deposition of Guy Rosen, Volume I, February 19, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
266. Deposition of Guy Rosen, Volume II, February 20, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]

267. Deposition of [REDACTED], November 14, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
268. Deposition of Jordan Furlong, Volume I, April 11, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
269. Deposition of Jordan Furlong, Volume II, April 12, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
270. Deposition of [REDACTED], Volume I, October 24, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
271. Deposition of [REDACTED], Volume II, October 25, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
272. Deposition of [REDACTED], Volume I, February 27, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
273. Deposition of [REDACTED], Volume II, February 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
274. Deposition of [REDACTED], Volume I, February 27, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
275. Deposition of [REDACTED], Volume II, February 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
276. Deposition of [REDACTED], PhD, Volume I, November 18, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcripts and Exhibits [Meta]
277. Deposition of [REDACTED], PhD, Volume II, November 19, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
278. Deposition of Lotte Rubaek, April 1, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
279. Deposition of Margaret Gould Stewart, October 21, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
280. Deposition of Mark Zuckerberg, Volume I, March 27, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
281. Deposition of Mark Zuckerberg, Volume II, March 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]



282. Deposition of Matthew Tenenbaum, Volume I, January 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
283. Deposition of Micahel "Miki" Rothschild, Volume I, January 21, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
284. Deposition of Micahel "Miki" Rothschild, Volume II, January 22, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
285. Deposition of Michael E. Weissinger, December 18, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Snap]
286. Deposition of [REDACTED], Volume I, January 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
287. Deposition of [REDACTED], Volume II, January 29, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
288. Deposition of [REDACTED], Volume I, November 7, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
289. Deposition of [REDACTED], Volume II, November 8, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
290. Deposition of [REDACTED], March 3, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
291. Deposition of Peter J. Sellis, February 6, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Snap]
292. Deposition of [REDACTED], Volume I, December 12, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
293. Deposition of [REDACTED], Volume II, December 13, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
294. Deposition of [REDACTED], Volume I, December 5, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
295. Deposition of [REDACTED], Volume II, December 6, 2024, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
296. Deposition of Reagan Maher, February 21, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]

297. Deposition of [REDACTED], Volume I, February 11, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
298. Deposition of [REDACTED], Volume II, February 12, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
299. Deposition of Vaishnavi Jayakumar, Volume I, January 30, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
300. Deposition of Vaishnavi Jayakumar, Volume II, January 31, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
301. Deposition of Victoria McCullough, February 19, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [TikTok]
302. Deposition of [REDACTED], PhD, January 28, 2025, In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL 3047), Transcript and Exhibits [Meta]
303. Deposition of [REDACTED], March 18, 2024, State of Tennessee vs. Meta Platforms, Inc., and Instagram LLC (Case No. 23-1364-IV), Transcript and Exhibits [Meta]

#### **Expert Deposition Testimony and Exhibits**

304. Deposition of Adriana Galván, Ph.D., July 15, 2025, In re: Social Media Adolescent Addiction (JCCP No. 5255), Transcript and Exhibits
305. Deposition of Douglas Tucker, Ph.D., July 10, 2025, In re: Social Media Adolescent Addiction (JCCP No. 5255), Transcript and Exhibits Pfeifer
306. Deposition of Jennifer H. Pfeifer, Ph.D., June 26, 2025, In re: Social Media Adolescent Addiction (JCCP No. 5255), Transcript and Exhibits
307. Deposition of Kenneth T. Kishida, Ph.D., July 2, 2025, In re: Social Media Adolescent Addiction (JCCP No. 5255), Transcript and Exhibits
308. Deposition of Randy P. Auerbach, Ph.D., July 10, 2025, In re: Social Media Adolescent Addiction (JCCP No. 5255), Transcript and Exhibits

#### **Expert Reports**

309. Defendants' Expert Report of Adriana Galván, Ph.D., In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL No. 3047), July 9, 2025
310. Defendants' Rebuttal Report of Dr. Randy Auerbach to Personal Injury and School District Plaintiffs' Experts, In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, MDL No. 3047, July 9, 2025
311. Defendants' Expert Kenneth T. Kishida, Phd – Rebuttal Report, Judicial Council Coordination Proceeding (JCCP) No. 5255, May 16, 2025
312. Defendants' Expert Rebuttal Report of Douglas Tucker, M.D., Re: Social Media Cases Judicial Council Coordination Proceedings No. 5255, May 16, 2025

313. Defendants' Expert Rebuttal Report of Dr. Randy Auerbach, Judicial Council Coordination Proceeding No. 5255, May 16, 2025
314. Defendants' Expert Report of Adriana Galván, Ph.D., Judicial Council Coordination Proceeding (JCCP) No. 5255, April 18, 2025
315. Defendants' Expert Report of Douglas Tucker, M.D., In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, MDL No. 3047, July 9, 2025
316. Defendants' Expert Report of Douglas Tucker, M.D., Re: Social Media Cases, Judicial Council Coordination Proceedings No. 5255, April 18, 2025
317. Defendants' Expert Report of Dr. Randy Auerbach, Judicial Council Coordination Proceeding (JCCP) No. 5255, April 18, 2025
318. Defendants' Expert Report of Kenneth T. Kishida, Phd., Judicial Council Coordination Proceeding (JCCP) No. 5255, April 18, 2025
319. Defendants' Expert Report of Kenneth T. Kishida, Ph.D. In re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation (MDL No. 3047), July 9, 2025
320. Defendants' Rebuttal Expert Report of Adriana Galván, Ph.D., Judicial Council Coordination Proceeding (JCCP) #5255, May 16, 2025
321. Defendants' Rebuttal Expert Report of Dr. Ian Gotlib, Judicial Council Coordination Proceeding No. 5255, including Appendices A and B, May 16, 2025
322. Defendants' Rebuttal Expert Report of Dr. Robert Platt, Judicial Council Coordination Proceeding No. 5255, May 16, 2025
323. Defendants' Rebuttal Expert Report, Prof. Nicholas B. Allen, Ph.D., Judicial Council Coordination Proceeding No. 5255, May 16, 2025
324. Jennifer Pfeifer, Ph.D. Rebuttal Expert Report, YouTube-Specific Rebuttal to Reports Submitted by Plaintiff's Experts on April 18, 2025, Judicial Council Coordination Proceeding No. 5255, Submitted on Behalf of Google and YouTube on May 16, 2025
325. Plaintiffs' Expert Report of Dimitri A. Christakis, MD MPH, MDL 3047, May 16, 2025
326. Plaintiffs' Expert Report of Dr. Jean M. Twenge, Ph.D., MDL 3047, May 16, 2025
327. Plaintiffs' Expert Report of Dr. Jean M. Twenge, Ph.D., San Diego State University, JCCP 5255, April 18, 2025
328. Plaintiffs' Expert Report of Dr. Ramin Mojtabai, M.D., Ph.D., MPH., JCCP 5255, April 18, 2025
329. Plaintiffs' Expert Report of Dr. Ramin Mojtabai, M.D., Ph.D., MPH., MDL 3047, May 16, 2025
330. Plaintiffs' Expert Report of Eva Telzer, Ph.D., JCCP 5255, April 18, 2025
331. Plaintiffs' Expert Report of Eva Telzer, Ph.D., MDL 3047, May 16, 2025
332. Plaintiffs' Expert Report, Anna Lembke, M.D. Relating to: Social Media Litigation, MDL 3047, May 16, 2025

**Production Bates Numbered Documents**

333. GOOG-3047MDL-00000064  
334. GOOG-3047MDL-00236723  
335. GOOG-3047MDL-00246776  
336. GOOG-3047MDL-00275948  
337. GOOG-3047MDL-00284728  
338. GOOG-3047MDL-00442481  
339. GOOG-3047MDL-00579554  
340. GOOG-3047MDL-00641947  
341. GOOG-3047MDL-00665175  
342. GOOG-3047MDL-00767071  
343. GOOG-3047MDL-00798577  
344. GOOG-3047MDL-00809552  
345. GOOG-3047MDL-00847048  
346. GOOG-3047MDL-00874191  
347. GOOG-3047MDL-00937887  
348. GOOG-3047MDL-01256238  
349. GOOG-3047MDL-01259508  
350. GOOG-3047MDL-01262144  
351. GOOG-3047MDL-01268284  
352. GOOG-3047MDL-01372609  
353. GOOG-3047MDL-01435767  
354. GOOG-3047MDL-01604798  
355. GOOG-3047MDL-01608261  
356. GOOG-3047MDL-01653710  
357. GOOG-3047MDL-01714567  
358. GOOG-3047MDL-01724060  
359. GOOG-3047MDL-01735688  
360. GOOG-3047MDL-01839246  
361. GOOG-3047MDL-02009802  
362. GOOG-3047MDL-02025298  
363. GOOG-3047MDL-02113187  
364. GOOG-3047MDL-02142720  
365. GOOG-3047MDL-02440208  
366. GOOG-3047MDL-02442044  
367. GOOG-3047MDL-02486605  
368. GOOG-3047MDL-02889060  
369. GOOG-3047MDL-02896878  
370. GOOG-3047MDL-02931138  
371. GOOG-3047MDL-02938010  
372. GOOG-3047MDL-03045540  
373. GOOG-3047MDL-03080564  
374. GOOG-3047MDL-03499027  
375. GOOG-3047MDL-03971647  
376. GOOG-3047MDL-04007342

377. GOOG-3047MDL-04135981  
378. GOOG-3047MDL-04220318  
379. GOOG-3047MDL-04269559  
380. GOOG-3047MDL-04625648  
381. GOOG-3047MDL-04683418  
382. GOOG-3047MDL-04805860  
383. GOOG-3047MDL-04813572  
384. GOOG-3047MDL-04882611  
385. GOOG-3047MDL-04918852  
386. GOOG-3047MDL-05190031  
387. GOOG-3047MDL-05255563  
388. GOOG-3047MDL-05709252  
389. GOOG-3047MDL-05733243  
390. GOOG-3047MDL-05960976  
391. GOOG-3047MDL-05997412  
392. GOOG-3047MDL-05997413  
393. GOOG-3047MDL-05997416  
394. Haugen\_00000797  
395. Haugen\_00000934  
396. Haugen\_00001033  
397. Haugen\_00002372  
398. Haugen\_00002527  
399. Haugen\_00003463  
400. Haugen\_00003739  
401. Haugen\_00005378  
402. Haugen\_00005458  
403. Haugen\_00006240  
404. Haugen\_00006798  
405. Haugen\_00007055  
406. Haugen\_00007080  
407. Haugen\_00007350  
408. Haugen\_00007481  
409. Haugen\_00008207  
410. Haugen\_00008303  
411. Haugen\_00010114  
412. Haugen\_00011969  
413. Haugen\_00012303  
414. Haugen\_00015958  
415. Haugen\_00016373  
416. Haugen\_00016699  
417. Haugen\_00016728  
418. Haugen\_00016893  
419. Haugen\_00017069  
420. Haugen\_00017177  
421. Haugen\_00017238  
422. Haugen\_00017263

423. Haugen\_00017698  
424. Haugen\_00019219  
425. Haugen\_00020135  
426. Haugen\_00020607  
427. Haugen\_00021096  
428. Haugen\_00021247  
429. Haugen\_00021690  
430. Haugen\_00023066  
431. Haugen\_00023087  
432. Haugen\_00023849  
433. Haugen\_00024450  
434. Haugen\_00024997  
435. Haugen\_00025741  
436. META3047MDL-003-00000029  
437. META3047MDL-003-00001846  
438. META3047MDL-003-00003188  
439. META3047MDL-003-00003731  
440. META3047MDL-003-00009133  
441. META3047MDL-003-00011697  
442. META3047MDL-003-00011760  
443. META3047MDL-003-00012994  
444. META3047MDL-003-00013254  
445. META3047MDL-003-00013951  
446. META3047MDL-003-00021048  
447. META3047MDL-003-00028019  
448. META3047MDL-003-00028214  
449. META3047MDL-003-00028226  
450. META3047MDL-003-00028701  
451. META3047MDL-003-00030070  
452. META3047MDL-003-00042548  
453. META3047MDL-003-00043617  
454. META3047MDL-003-00053803  
455. META3047MDL-003-00066361  
456. META3047MDL-003-00068860  
457. META3047MDL-003-00068863  
458. META3047MDL-003-00077939  
459. META3047MDL-003-00079563  
460. META3047MDL-003-00082165  
461. META3047MDL-003-00086015  
462. META3047MDL-003-00086451  
463. META3047MDL-003-00087111  
464. META3047MDL-003-00089107  
465. META3047MDL-003-00089132  
466. META3047MDL-003-00089174  
467. META3047MDL-003-00091196  
468. META3047MDL-003-00093303

469. META3047MDL-003-00103260  
470. META3047MDL-003-00107197  
471. META3047MDL-003-00119838  
472. META3047MDL-003-00121715  
473. META3047MDL-003-00121726  
474. META3047MDL-003-00121808  
475. META3047MDL-003-00123666  
476. META3047MDL-003-00132740  
477. META3047MDL-003-00133741  
478. META3047MDL-003-00134687  
479. META3047MDL-003-00134794  
480. META3047MDL-003-00146240  
481. META3047MDL-003-00146492  
482. META3047MDL-003-00153063  
483. META3047MDL-003-00156888  
484. META3047MDL-003-00157020  
485. META3047MDL-003-00157036  
486. META3047MDL-003-00157133  
487. META3047MDL-003-00157185  
488. META3047MDL-003-00159559  
489. META3047MDL-003-00161686  
490. META3047MDL-003-00161881  
491. META3047MDL-003-00170806  
492. META3047MDL-003-00171899  
493. META3047MDL-003-00175114  
494. META3047MDL-003-00175961  
495. META3047MDL-003-00178437  
496. META3047MDL-003-00184585  
497. META3047MDL-003-00186838  
498. META3047MDL-003-00186841  
499. META3047MDL-003-00188109  
500. META3047MDL-004-00013865  
501. META3047MDL-005-00000001  
502. META3047MDL-005-00000333  
503. META3047MDL-014-00026293  
504. META3047MDL-014-00046053  
505. META3047MDL-014-00206538  
506. META3047MDL-014-00275614  
507. META3047MDL-014-00305741  
508. META3047MDL-014-00359270  
509. META3047MDL-014-00383102  
510. META3047MDL-019-00003016  
511. META3047MDL-019-00017593  
512. META3047MDL-019-00032957  
513. META3047MDL-019-00033734  
514. META3047MDL-019-00036538



515. META3047MDL-019-00036714  
516. META3047MDL-019-00059356  
517. META3047MDL-019-00064740  
518. META3047MDL-020-00005380  
519. META3047MDL-020-00094563  
520. META3047MDL-020-00230760  
521. META3047MDL-020-00256107  
522. META3047MDL-020-00260850  
523. META3047MDL-020-00340672  
524. META3047MDL-020-00342152  
525. META3047MDL-020-00342154  
526. META3047MDL-020-00342155  
527. META3047MDL-020-00342286  
528. META3047MDL-020-00563113  
529. META3047MDL-020-00575591  
530. META3047MDL-020-00592294  
531. META3047MDL-020-00651532  
532. META3047MDL-020-00703084  
533. META3047MDL-031-00246746  
534. META3047MDL-034-00037237  
535. META3047MDL-037-00020759  
536. META3047MDL-037-00068917  
537. META3047MDL-040-00010840  
538. META3047MDL-040-00028597  
539. META3047MDL-040-00028639  
540. META3047MDL-040-00049387  
541. META3047MDL-040-00078853  
542. META3047MDL-040-00079907  
543. META3047MDL-040-00347382  
544. META3047MDL-040-00399876  
545. META3047MDL-040-00449305  
546. META3047MDL-040-00583291  
547. META3047MDL-044-00026817  
548. META3047MDL-044-00077299  
549. META3047MDL-044-00091392  
550. META3047MDL-044-00100788  
551. META3047MDL-044-00108564  
552. META3047MDL-044-00171345  
553. META3047MDL-046-00112613  
554. META3047MDL-046-00113378  
555. META3047MDL-047-00006815  
556. META3047MDL-047-00058006  
557. META3047MDL-047-00096505  
558. META3047MDL-047-00361907  
559. META3047MDL-047-01028819  
560. META3047MDL-047-01167629

561. META3047MDL-047-01197619  
562. META3047MDL-050-00184006  
563. META3047MDL-050-00215087  
564. META3047MDL-050-00330868  
565. META3047MDL-050-00330880  
566. META3047MDL-050-00343518  
567. META3047MDL-050-00343521  
568. META3047MDL-053-00028484  
569. META3047MDL-059-00000325  
570. META3047MDL-065-00019614  
571. META3047MDL-072-00376915  
572. META3047MDL-072-00704205  
573. META3047MDL-072-01105909  
574. META3047MDL-072-01105914  
575. META3047MDL-072-01393327  
576. META3047MDL-072-01394520  
577. META3047MDL-074-00027496  
578. META3047MDL-087-00030017  
579. META3047MDL-092-00003365  
580. META3047MDL-106-00000004  
581. META3047MDL-136-00013164  
582. META3047MDL-138-00000416  
583. META3047MDL-138-00000617  
584. META3047MDL-148-00012112  
585. SNAP0000001  
586. SNAP0000008  
587. SNAP0000103  
588. SNAP0000137  
589. SNAP0000246  
590. SNAP0020087  
591. SNAP0040771  
592. SNAP0064557  
593. SNAP0188592  
594. SNAP0224369  
595. SNAP0307144  
596. SNAP0396889  
597. SNAP0404262  
598. SNAP0464752  
599. SNAP0525938  
600. SNAP0652397  
601. SNAP0755817  
602. SNAP0857671  
603. SNAP0886473  
604. SNAP0896563  
605. SNAP0912095  
606. SNAP0933703

607. SNAP1047045  
608. SNAP1098525  
609. SNAP1117208  
610. SNAP1213658  
611. SNAP1251784  
612. SNAP1303811  
613. SNAP1322227  
614. SNAP1393050  
615. SNAP1415121  
616. SNAP1556755  
617. SNAP1601242  
618. SNAP1638832  
619. SNAP1731042  
620. SNAP1768432  
621. SNAP1832803  
622. SNAP1847822  
623. SNAP1940643  
624. SNAP1957460  
625. SNAP2076002  
626. SNAP2087611  
627. SNAP2097141  
628. SNAP2109600  
629. SNAP2183204  
630. SNAP2268186  
631. SNAP2324154  
632. SNAP2345620  
633. SNAP2425354  
634. SNAP2459988  
635. SNAP2462286  
636. SNAP2913168  
637. SNAP2987900  
638. SNAP3074582  
639. SNAP3126923  
640. SNAP3126959  
641. SNAP3151495  
642. SNAP3155743  
643. SNAP3160903  
644. SNAP3182100  
645. SNAP3666384  
646. SNAP3744792  
647. SNAP3760712  
648. SNAP3800391  
649. SNAP4227244  
650. SNAP4235758  
651. SNAP4326932  
652. SNAP4354972

653. SNAP4620287  
654. SNAP4712437  
655. SNAP4723815  
656. SNAP4743499  
657. SNAP4782836  
658. SNAP4836937  
659. SNAP4951751  
660. SNAP4954018  
661. SNAP5147058  
662. SNAP5182516  
663. SNAP5274657  
664. SNAP5486213  
665. SNAP5553072  
666. SNAP6110229  
667. SNAP6110234  
668. SNAP6116693  
669. SNAP6403466  
670. SNAP7307710  
671. TIKTOK3047MDL-001-00000177  
672. TIKTOK3047MDL-001-00000204  
673. TIKTOK3047MDL-001-00000215  
674. TIKTOK3047MDL-001-00000622  
675. TIKTOK3047MDL-001-00000769  
676. TIKTOK3047MDL-001-00000812  
677. TIKTOK3047MDL-001-00000813  
678. TIKTOK3047MDL-001-00000920  
679. TIKTOK3047MDL-001-00001985  
680. TIKTOK3047MDL-001-00002382  
681. TIKTOK3047MDL-001-00002937  
682. TIKTOK3047MDL-001-00002982  
683. TIKTOK3047MDL-001-00003427  
684. TIKTOK3047MDL-001-00057954  
685. TIKTOK3047MDL-001-00058135  
686. TIKTOK3047MDL-001-00060515  
687. TIKTOK3047MDL-001-00060814  
688. TIKTOK3047MDL-001-00060856  
689. TIKTOK3047MDL-001-00060862  
690. TIKTOK3047MDL-001-00060922  
691. TIKTOK3047MDL-001-00060986  
692. TIKTOK3047MDL-002-00075240  
693. TIKTOK3047MDL-002-00077113  
694. TIKTOK3047MDL-002-00077325  
695. TIKTOK3047MDL-002-00085753  
696. TIKTOK3047MDL-002-00090900  
697. TIKTOK3047MDL-002-00091546  
698. TIKTOK3047MDL-002-00091621

699. TIKTOK3047MDL-002-00091634  
700. TIKTOK3047MDL-002-00098058  
701. TIKTOK3047MDL-002-00099764  
702. TIKTOK3047MDL-002-00100711  
703. TIKTOK3047MDL-002-00100852  
704. TIKTOK3047MDL-002-00101525  
705. TIKTOK3047MDL-002-00101574  
706. TIKTOK3047MDL-002-00101838  
707. TIKTOK3047MDL-002-00102517  
708. TIKTOK3047MDL-002-00102746  
709. TIKTOK3047MDL-002-00119724  
710. TIKTOK3047MDL-004-00137151  
711. TIKTOK3047MDL-004-00144763  
712. TIKTOK3047MDL-004-00147779  
713. TIKTOK3047MDL-004-00151061  
714. TIKTOK3047MDL-004-00232976  
715. TIKTOK3047MDL-004-00290586  
716. TIKTOK3047MDL-004-00291835  
717. TIKTOK3047MDL-004-00292408  
718. TIKTOK3047MDL-004-00318166  
719. TIKTOK3047MDL-004-00321758  
720. TIKTOK3047MDL-004-00323151  
721. TIKTOK3047MDL-004-00323234  
722. TIKTOK3047MDL-005-00325851  
723. TIKTOK3047MDL-006-00325873  
724. TIKTOK3047MDL-006-00327425  
725. TIKTOK3047MDL-010-00329637  
726. TIKTOK3047MDL-010-00330011  
727. TIKTOK3047MDL-016-00351152  
728. TIKTOK3047MDL-016-00355207  
729. TIKTOK3047MDL-018-00372262  
730. TIKTOK3047MDL-018-00372312  
731. TIKTOK3047MDL-021-LARK-00005359  
732. TIKTOK3047MDL-021-LARK-00005437  
733. TIKTOK3047MDL-021-LARK-00026434  
734. TIKTOK3047MDL-021-LARK-00026469  
735. TIKTOK3047MDL-024-LARK-00026653  
736. TIKTOK3047MDL-024-LARK-00042686  
737. TIKTOK3047MDL-024-LARK-00043068  
738. TIKTOK3047MDL-024-LARK-00045100  
739. TIKTOK3047MDL-024-LARK-00063580  
740. TIKTOK3047MDL-031-LARK-00102177  
741. TIKTOK3047MDL-036-LARK-00170056  
742. TIKTOK3047MDL-039-LARK-00206737  
743. TIKTOK3047MDL-039-LARK-00213033  
744. TIKTOK3047MDL-042-LARK-00237491

745. TIKTOK3047MDL-043-00834104  
746. TIKTOK3047MDL-044-00856423  
747. TIKTOK3047MDL-047-LARK-00510814  
748. TIKTOK3047MDL-055-LARK-00598668  
749. TIKTOK3047MDL-056-00956009  
750. TIKTOK3047MDL-056-00965196  
751. TIKTOK3047MDL-058-LARK-00710555  
752. TIKTOK3047MDL-060-01119950  
753. TIKTOK3047MDL-060-01142302  
754. TIKTOK3047MDL-060-01169876  
755. TIKTOK3047MDL-068-LARK-01057042  
756. TIKTOK3047MDL-078-LARK-01910040  
757. TIKTOK3047MDL-111-LARK-06042154  
758. TIKTOK3047MDL-112-04265616  
759. TIKTOK3047MDL-120-LARK-06208410  
760. TIKTOK3047MDL-125-LARK-06301683  
761. TIKTOK3047MDL-150-LARK-07285061  
762. TIKTOK3047MDL-197-04799946

*Deposition transcripts and exhibits listed herein exclude those subject to defense production  
clawbacks.*

# Anna Lembke, M.D. Report

## EXHIBIT C

### Statement of Compensation Rate



Anna Lembke, M.D.  
Stanford University School of Medicine  
Department of Psychiatry and Behavioral Sciences

**Expert Witness Fee Schedule:**

Work	Details	Fee
Preliminary Work	Telephone conferences, record review, report writing, and travel	\$800 per hour
Court Work	Court appearances and depositions	\$1000 per hour
Expenses	Travel and other reasonable out-of-pocket expenses	Reimbursement

# Anna Lembke, M.D. Report

## EXHIBIT D

Prior Testimony

Anna Lembke, M.D.  
Stanford University School of Medicine  
Department of Psychiatry and Behavioral Sciences

**Prior Testimony**

- *People v. Philip Morris Ingram*, (Cal. Super. Ct., Docket 62-144622)
- *National Prescription Opiate Litigation*, MDL No. 2804 (N.D. Ohio, Case 1:17-md-2804)
- *In Re Opioid Litigation*, (Suffolk County, New York Supreme Court, Index No. 400000/2017), relating to Case Nos. County of Suffolk, 400001/2017; County of Nassau, 400008/2017; and New York State, 400016/2018
- *Cabell County Commission and City of Huntington, West Virginia, (The Cabell Huntington Community) v. AmerisourceBergen Drug Corporation, Cardinal Health, Inc., and McKesson Corporation*, No. 1:17-op-45053-DAP and No. 1:17-op-45054
- *People of the State of California v. Purdue Pharma, L.P., et al.*, No. 30-2014-00725287-CU-BT-CXC
- *Miner v. Olsen, et al.* (arbitration)
- *The County of Lake, Ohio v. CVS Health Corporation., et al.*, No. 18-op-45032 and 18-op-45079
- *County of Dallas, Texas vs. Johnson & Johnson, et al.*, No. 3:18-cv-00426-M and Cause No. DC-18-00290
- *City and County of San Francisco et al. v. Purdue Pharma, LP et al.* No. 3:18-cv-07591-CRB
- *The Montgomery County Board of County Commissioners, et al. v Cardinal Health Inc. et al., Case No 1:18-op-46326-DAP*
- *Cobb County, v. Purdue Pharma, et al.* Case No. 1:18-op-45817-DAP
- *Tarrant County, v. Purdue Pharma, L.P., et al.* Case No. 1:17-md-2804
- *Smith, et al., v. TikTok, Inc., et al.*, Los Angeles Superior Court, JCCP No. 5255, Social Media Cases